WILDLIFE REVIEW

AN ABSTRACTING SERVICE FOR WILDLIFE MANAGEMENT
ISSUED FOR THE INFORMATION OF COOPERATORS
BY THE FISH AND WILDLIFE SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

Finished - R.E.R.

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Washington, D. C. No. 28 August, 1940

Bibliography: Federal publications

Schmeckebier, Laurence F. Government publications and their use, Brookings Institution (Washington, D. C. $3.00 a copy), Second, revised, edition, 479 pp., 1939.

The appearance of a revised edition makes an opportunity for calling attention to a useful work that should have been noted when first published in 1936. It is a comprehensive guide to its subject that in a foreword has the approval of the Federal Superintendent of Documents--high recognition, indeed. Chapter headings must suffice here to indicate the contents: Catalogs and indexes, bibliographies, classification, availability of publications, congressional publications, Federal and State constitutions, Federal laws, State laws, court decisions, administrative regulations and departmental rulings, presidential papers, foreign affairs, reports on operations, organization and personnel, maps, and technical and other department publications. An appendix lists depository libraries. There is a full index. The work is a manual on Federal publications and how to find them.

Bibliography: Fur trade

Cuthbertson, Stuart, and John C. Evers. A preliminary bibliography on the American fur trade, U. S. Dept. of the Interior (Jefferson National Expansion Memorial, St. Louis, Mo.), 191 pp. (mimeographed), 1939 (1940).

Extensive bibliography subdivided on a geographic basis, the titles in the divisions arranged alphabetically by authors.

Bibliography: Science and society

Adams, Charles C. Selected references on the relation of science to modern life, New York State Museum (Albany), Bul. 322, pp. 79-96, 1940.

A section on "The cultural value of nature and science" includes 65 titles.

Biological Survey: Federal aid act

Day, Albert M. Federal aid in wildlife restoration, General information, U. S. Dept. of the Interior, Wildlife Circ. 3 (Supt. of Documents, Washington, D. C. 5 cents a copy), 11 pp., April 1940 (May).

Supersedes and has about the same contents as U. S. Dept. of Agriculture Misc. Publ. 350, "The wildlife restoration program under the Pittman-Robertson Act of 1937," which was abstracted in WILDLIFE REVIEW, No. 22, August 1939, page 2.

Classification: Grouse, Ruffed

Todd, W. E. Clyde. Eastern races of the ruffed grouse, The Auk (Rudyard Boulton, Field Museum, Chicago, Ill. $1.00 a copy), 57(3), July 1940, pp. 390-397.

Description of 3 new subspecies from the Appalachian Region, northern great plains, and northern Ontario, respectively, and comparative notes on the characters of the 8 known North American subspecies.

Classification: Rabbits

Orr, Robert T. The rabbits of California, Calif. Acad. Sci. (San Francisco) Occasional Papers 19, 227 pp., 10 pls., 30 figs., 1940 ($3.50 a copy).

Discussion of the characters of rabbits and their variations; key to 7 species (of 2 genera) occurring in California; the accounts of the species and subspecies include diagnosis, synonymy, statement of distribution, description of the various pelages, measurements, and in most cases life history, and reference to natural enemies. There is a 5-1/2 page list of literature cited.

Classification: Snakes, Pituophis

Stull, Olive G. Variations and relationships in the snakes of the genus Pituophis, U. S. National Museum Bul. 175 (Supt. of Documents, Washington, D. C. 35 cents a copy), 225 pp., 84 figs., 14 tables, 1940.

Monograph of the group of 6 species (13 subspecies) with key, synonymies, descriptions, illustrations, and discussions of range, variation, and relationships. These are the so-called bull, pine, and gopher snakes.

Conservation: Aims

Gabrielson, Ira N. Planning for wildlife restoration, Maryland Conservationist (514 Munsey Bldg., Baltimore, Md.), 17(2), Spring 1940, pp. 26-29.

Address given at the Fifth N. A. Wildlife Conference at Washington, D.C., March 1940. The speaker elaborated on the texts that all conservation programs are interrelated and that "we can have wildlife only by providing it a suitable place in which to live, and x x x we must keep our annual wildlife harvests below the annual production." The needs for a satisfactory national conservation program are: first, for research as a basis of management; second, the allotment of more lands where production of wildlife may be the primary enterprise; and third, a comprehensive educational effort to make the public conservation minded. Suggestions are made as to how all of these aspirations may be converted into realities. There is need, however, for patience as the processes by which restoration may be accomplished are necessarily time-consuming.

Conservation: By Federal agencies

Committee. The status of wildlife in the United States, U. S. Senate Special Committee on the Conservation of Wildlife Resources, 76th Congress, 3rd Session. Senate Report No. 1203, 457 pp., 74 pls., tables, 1940.

Statement by the Committee on its history, on the hearings held, and the legislation sponsored by it, and on its recommendations; these points are amplified in a special report by the Secretary of the Committee; the necessity of research is emphasized. The volume contains valuable reference material, including the text of Federal laws relating to the protection of wildlife (18 items covering 27 pages), tabulation of lands under control of the Biological Survey (266 parcels totaling 13,644,800 acres), tabulated estimate of big game and fur animals on national forests, and a list of game refuges on national forests (407 totaling 23,064,362 acres). The bulk of the volume is made up of contributions from Federal agencies whose work bears on wildlife conservation. That from the Biological Survey, written and compiled by H. P. Sheldon, comprises nearly a hundred pages. It is devoted chiefly to an exposition of the scientific work of the Bureau and of the waterfowl restoration program. The section provided by the Bureau of Fisheries (84 pp.) by Elmer Higgins and Rachel L. Carlson treats of the condition of commercial fisheries and angling resources, details governmental activities in relation to the fisheries, and discusses merits and deficiencies of the program. The Forest Service report (about 100 pages) by H. L. Shantz and John H. Hatton discusses inventories of big game on the national forests, which, in the period 1921 to date, have shown increases in all species except the mountain goat and bighorn. Objectives of wildlife management on the national forests are discussed and cooperation with other Federal agencies and with the States is detailed, in part by reproduction of existing working agreements. Forest and range research, grazing problems, and regional programs of wildlife management are described. Each of the 3 sections of the report thus far commented upon contains a bibliography of recent publications (official or unofficial, or both) by members of the respective staffs. The report of the National Park Service (31 pp.) was prepared by Victor H. Cahalane, Clifford C. Presnall, and Daniel B. Beard. It tells of national park policies in wildlife conservation and of their increasing effectiveness, details problems and accomplishments with key species, and briefly refers to wildlife conditions on numerous parks. Soil Conservation Service material furnished by Ernest G. Holt covers 18 pages in which are described a variety of lines of work of that organization in relation to wildlife. Briefer contributions are included from the Civilian Conservation Corps, Bureau of Reclamation, Office of Indian Affairs, Grazing Service, Agricultural Adjustment Administration, and the Land Classification Section of the Bureau of Agricultural Economics. All in all an interesting and valuable presentation of the accomplishments, objectives, and needs of the Federal wildlife conservation agencies.

Conservation: Humane trapping

Bailey, Vernon. Our fur bearing animals, National Humane Review (135 Washington Ave., Albany, N. Y.), 28(7), July 1940, pp. 6-9, 11 photos.

Chiefly on humane methods of trapping, including the use of chain-loop, killer, and cage traps. An accompanying article (pp. 3-5, 5 photos) is the latest of the annual reports on humane trap contests conducted by The American Humane Association. These papers are a mine of information on this important subject.

Conservation: Prairie chicken, Attwater's

Lehmann, Valgene W. Drums of the dying. The story of the Attwater prairie chicken, American Wildlife (Investment Bldg., Washington, D. C. 25 cents a copy), 29(3), May-June 1940, pp. 147-149.

Today this subspecies is on the verge of extinction, few being left in Louisiana and only about 8,000 in Texas. More than 90 percent of their former range has been transformed by agriculture, and the remaining favorable territory is rapidly being despoiled. Only immediate establishment of large refuges can save the bird. The article includes notes on life history and enemies and a discussion of destructive agricultural practices and how they may be modified.

Control: Alligator grass

Penfound, Wm. T. The biology of Achyranthes philoxeroides (Mart.) Standley, American Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 24(1), July 1940, pp. 248-252, 2 figs.

Distribution, growth, vegetative and floral characters, the plant as a competitor, and suggestions as to its elimination. This study was made with relation to mosquito control but the findings are of interest to wildlife managers who are called upon to combat alligator grass as a competitor of wild fowl food plants. Sodium arsenite applied at the rate of 100 lbs. to the acre killed all current growth; repetition of the treatment is necessary to eliminate the plants.

Accompanying articles deal similarly with Dianthera americana and Saururus cernuus.

Control: Eagles

Marshall, William H. An "eagle guard" developed in Idaho, The Condor, (W. Lee Chambers, 2068 Escarpa Drive, Eagle Rock, Calif. 50 cents a copy), 42(3), May-June 1940, p. 166, 1 photo.

Description and illustration of a simple device to keep eagles from alighting on power line perches installed at a cost of 20 cents per unit.

Control: Fish predators

Lagler, Karl F. Foul fowling?, Hunting and Fishing (27 Newbury St., Boston, Mass. 5 cents a copy), 17(8), Aug. 1940, pp. 9, 32, 4 photos.

At fish hatcheries each year about 50,000 birds and some 12,000 snakes, turtles, and miscellaneous animals are killed. This is undesirable destruction and suggestions are made as to the preferable control methods, including screening and wiring of hatchery waters.

Control: Pigeon, Wood

Alexander, W. B. The wood pigeon, Journ. Royal Agr. Soc. England (16 Bedford Square, London, W. C. 1, England), 100(3), 1940, reprint 9 pp., 1 map.

In winter the species occurs in large flocks which often do severe damage to root and green crops. Though sometimes augmented by flights from the continent, the flocks are usually of British origin. The diseases and enemies of the birds are discussed and control measures are recorded, including destruction of eggs and young and netting and shooting of adults. Wood pigeons are benefitted by game management procedures and by reforestation. The latter activity and also the creation of reserves favor the increase of predators and thus tend to load the other side of the balance. Organized shooting of adults seems the most promising means of control.

Control: Vultures

Anon. Wire traps for buzzards, Capper's Farmer (Capper Publications, Inc., Topeka Kans. 5 cents a copy), 51(4), April 1940, p. 33.

Pen of poultry netting 12 feet square with funnel built alongside on the ground and extending 4 foot into the pen. Entrance should be a close fit for the birds; in trying to get out they climb over it and do not find the opening. A hundred buzzards caught in 2 weeks. Another trap 20 feet high with the top open also was successful as the birds could not take wing again after alighting in it. Texas; brief remarks on damage done by attacking stock in parturition and their young.

Cycles: Hare, Snowshoe

Green, R. G., and C. A. Evans. Studies on a population cycle of snowshoe hares on the Lake Alexander Area. II. Mortalities according to age groups and seasons, Journ. Wildlife Management (Frank C. Edminster, Soil Conservation Service, Upper Darby, Pa. 75 cents a copy), 4(3), July 1940, pp. 267-278, 2 figs., 8 tables.

Authors' abstract: "Data derived from systematic trapping and banding of snowshoe hares are used in calculating the age ratios of hares on the Lake Alexander Area, Minnesota, during the spring of each year from 1934 through 1939. Yearlings constituted about 60 per cent of the total population in 1934, 1935, and 1936. Later, this proportion was markedly reduced concurrently with the increase in severity of the 'die-off.' In 1937 only 44 per cent of the hares were yearlings. In February, 1938, young hares made up about 80 per cent of the population on the area; but inasmuch as the total population had been greatly reduced, this relatively high figure represents an actual decrease in number of yearlings as compared with the number the previous year. In 1939, when the population was about double that of the preceding year, yearlings again constituted about 80 per cent of the total population of hares. Age ratios were shown to be essentially the same on December 20, 1935, as on March 20, 1936, although there was a mortality of more than 45 per cent among the

hares on the area between those dates. Throughout the years studied annual mortalities calculated from February to February remained at a fairly constant level of about 70 per cent for both yearlings and older hares, irrespective of the cyclic changes in the population. A full appreciation of the significance of the data on age ratios and annual mortalities among adult hares in relation to population cycles is dependent upon information regarding reproduction of hares to be presented in the third paper of the series."

Destruction: Bison

Godsoll, Philip H. The last round-up, Forest and Outdoors (610 Canada Cement Bldg., Montreal, Canada), 6(6), June 1940, pp. 174-175, 194-197, 3 photos.

Popular write-up of the destruction as a war measure of the Wainwright herd (21,000 animals); incidentally 1,500 elk, 500 deer, and 500 moose also are being killed. History of the buffalo herd and of the attempt to move part of it to the Wood buffalo territory along Slave River.

Destruction: Pheasants, young

Randall, Pierce E. Causes of juvenile mortality of the ringneck pheasant, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 11(3), June 1940, pp. 10-11, 28, 3 photos, 2 tables.

On a study area with 1 adult to 8 acres, the average number of eggs in a clutch was 10.8 and the average hatch 9.7. Reduction of the broods to an average of 8.5 each at 8 weeks or older is traced and the causes of mortality discussed and tabulated. The greatest single cause was mowing, 18.8%, and the most serious predator was Cooper's hawk, responsible for 10.4 percent of juvenile losses. A third of the total mortality remained unaccounted for.

Destruction: Whales

Murphy, Robert Cushman. Lo, the poor whale!, Science (Lancaster, Pa. 15 cents a copy), 91(2364), April 19, 1940, pp. 373-376.

Improved equipment has resulted in annually increasing slaughter of whales until one habitat after another has been depleted. Between 1920 and 1940 about half as many whales were killed as during the preceding 300 years together. In the last 30 years, more than 40 million 50-gallon barrels of whale oil has been rendered. "The number of whales being slain is at least fourfold what the oceans can endure on a long-term basis, yet the goal of reasonable, and hence perpetual, utilization seems farther off than ever."

Diseases and Parasites: Acarina

Cooley, R. A., and Glen M. Kohls. Two new species of Argasidae (Acarina: Ixodoidea), U. S. Public Health Reports (Supt. of Documents, Washington, D. C. 5 cents a copy), 55(21), May 24, 1940, pp. 925-933, 1 pl., 2 figs.

Ornithodoros dyeri from bat guano in Arizona (see accompanying abstract of an article by C. B. Philip), and Otobius lagophilus from rabbits in western States; description and illustration of all stages; comparative notes.

Diseases and Parasites: Acarina

Philip, Cornelius B. Ticks (Ornithodoros spp.) in Arizona bat "caves," U. S. Public Health Reports (Supt. of Documents, Washington, D. C. 5 cents a copy), 55(16), April 19, 1940, pp. 680-682.

Notes on bats and the ticks associated with them in Arizona. The bat guano tick O. coprophilus, so far as observed, appears unlikely to be concerned in transmission of disease to man; it is not yet known to parasitize bats.

Diseases and Parasites: Anaplasmosis

Boynton, Wm. H., and Gladys M. Woods. Anaplasmosis among deer in the natural state, Science (Lancaster, Pa. 15 cents a copy), 91(2355), Feb. 16, 1940, p. 168.

Columbian black-tailed deer near Mt. Hamilton, California, from which the disease was identified, apparently had acted as a reservoir of infection for cattle presumably through the intermediacy of the tick Dermacentor occidentalis.

Diseases and Parasites: Anthrax

Stiles, Geo. W., and C. L. Davis. Anthrax in minks, Journ. Amer. Veterinary Medical Assoc. (221 N. La Salle St., Chicago, Ill. 75 cents a copy), 96(756), March 1940, pp. 407-409, 2 figs.

Review of literature of the subject (7 titles cited) and report on an outbreak of anthrax among ranch minks in Colorado; on one farm 500 animals died in 5 days. Symptoms and lesions are described. The disease probably was acquired from infected food. Ranch animals should not be fed the flesh of ailing livestock.

Diseases and Parasites: Botulism

Batson, H. C. Western duck sickness (botulism) in S. Dak., South Dakota Conservation Digest (S. Dak. Game and Fish Dept., Pierre), July 1940, pp. 6-7, 11-13, 14-16, 8 photos, 2 tables.

Review of the history of knowledge of botulism and tabulation of information on outbreaks in South Dakota, 1937-39; the first known outbreak in this State was in 1898. Cause of the disease, strength of the botulinus toxin, its effects upon birds, epidemiology of western duck sickness, treatment of affected birds, the fate of recovered ducks, control and prevention of botulism, and susceptibility of domesticated birds and man to the malady are discussed. This is an important article, making a distinct advance in knowledge of botulinus intoxication. The author demonstrates that many apparently recovered birds die

later from effects of the poisoning, that others remain carriers of the causative organism which they may introduce into previously uninfected waters, where it may kill birds not previously exposed. New light is thrown upon control measures though none really effective and practicable has as yet been developed.

Diseases and Parasites: Botulism

True, Gordon H., Jr. Duck disease, California Conservationist (State Dept. of Natural Resources, Sacramento, Calif. 15 cents a copy), 5(6), June 1940, pp. 1-3, 1 pl.

Historical account; notes on recent outbreaks in California, and on collecting and treating the sick birds; about 80 percent recover. A table shows the numbers of 21 species of birds found dead (1,879), or sick and treated (1,277), with the percentage of recovery, in 1939.

Diseases and Parasites: Cestoda, Diorchis

Schultz, Richard L. The genus Diorchis Clerc 1903, American Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 23(2), March 1940, pp. 382-397, 18 figs.

Catalog of 23 species, list of invalid specific names, enumeration of hosts (birds), descriptive key to the species (rostellar hooks illustrated), bibliography of 35 titles.

Diseases and Parasites: Cestoda, Oochoristica

Hughes, R. Chester. The genus Oochoristica Lühe 1898, American Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 23(2), March 1940, pp. 368-381.

Catalog of 45 species, list of invalid specific names, descriptive key to the species, list of hosts (reptiles and mammals), and 2-1/2 page bibliography.

Diseases and Parasites: Distemper

Wipf, Louis. Inclusion bodies in distemper, National Fur News (444 Seventeenth St., Denver, Colo. Monthly, $1.00 a year), 12(4), May 1940, p. 4, 2 figs.

Technic for identifying distemper by the inclusion bodies; instructions for shipping carcasses for autopsy.

Diseases and Parasites: Distemper, mink

Pinkerton, Henry. Immunological and histological studies on mink distemper, Journ. Amer. Veterinary Medical Assoc. (221 N. La Salle St., Chicago, Ill. 75 cents a copy), 96(756), March 1940, pp. 347-355.

An epizootic disease identified as a strain of distemper differing from both the ferret and dog strains was seriously destructive on mink ranches in New England and New York in 1938. Laboratory studies of the malady and of immunization against it and treatment of it are reported. Bibliography of 6 titles.

Diseases and Parasites: Equine encephalomyelitis

Brandly, C. A. Birds as possible reservoirs of equine encephalomyelitis infection, North American Veterinarian (210 South Desplaines St., Chicago, Ill. 50 cents a copy), 21(2), Feb. 1940, pp. 95-96.

Review of literature (7 titles cited); the evidence as to birds serving as reservoirs of the disease is by no means satisfactory; further research is much needed.

Diseases and Parasites: Insecta, Mallophaga

Emerson, Mary C. Records of Mallophaga from Oklahoma hosts, Canadian Entomologist (R. H. Ozburn, Guelph, Canada), 72(5), May 1940, pp. 104-108.

Check-list of 65 species of these bird and mammal parasites, with host index.

Diseases and Parasites: Internal parasites

Harkema, Reinard. Internal parasites, Wild animals within wild animals, North Carolina Wildlife Conservation (Division of Game and Inland Fisheries, Raleigh, N. C.), 4(6), June 1940, pp. 12-14.

Brief popular account of the life histories of typical groups: coccidia, flukes, tapeworms, and roundworms, with suggestions as to control.

Diseases and Parasites: Lead poisoning

Osmer, Thos. L. G. Lead shot: its danger to waterfowl, Scientific Monthly (Lancaster, Pa. 50 cents a copy), 50(5), May 1940, pp. 455-459.

History of knowledge of lead-poisoning from 1842; conditions under which lead pellets are ingested by ducks; surveys in Minnesota to determine the number of shot available showed an average density of 1.5 pellets to every square foot of lake bottom. "When the commercial production of a non-toxic shot becomes feasible the change should be made even if compelling legislation is necessary." It is inadvisable to use for refuges areas that have been heavily shot over.

Diseases and Parasites: Nematoda, Aproctella

Hamann, C. B. Notes on Aproctella nuda sp. nov., a filarioid nematode from the chimney swift, Chaetura pelagica (Linn.), American Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 23(2), March 1940, pp. 390-392, 6 figs.

Description, illustration, comparative notes; type locality: Lafayette, Indiana.

Diseases and Parasites: Nematoda, Sarconema

Quortrup, E. R., and A. L. Holt. Filariasis in wild swans, Journ. American Veterinary Medical Assoc. (221 N. La Salle St., Chicago, Ill. 75 cents a copy), 96(757), April 1940, pp. 543-544, 1 fig.

Sarconema eurycerca in 10 of 42 whistling swans affected by lead poisoning in Utah; in one bird from Idaho the microfilariae apparently were the cause of death.

Diseases and Parasites: Nematoda, Thelazia

Oberhansley, Frank R. California mule deer a host for nematode eye worms in Sequoia National Park, Journ. American Veterinary Medical Assoc. (221 N. La Salle St., Chicago, Ill. 75 cents a copy), 96(757), April 1940, p. 542.

Thelazia californiensis; 50 in one eye; symptoms and lesions.

Diseases and Parasites: Plague

Hampton, Brock C. Plague in the United States, U. S. Public Health Reports (Supt. of Documents, Washington, D. C. 5 cents a copy), 55(26), June 28, 1940, pp. 1143-1158, 2 tables.

"From the time of the first appearance of plague in the United States to January 1, 1940, there have been recorded 499 cases with 314 deaths." Rats as vectors receive frequent mention and plague infection in wild rodents, rodent parasites, and rabbits is the subject of a section of the paper, which includes a chronological record of plague infection in the animals mentioned, and a list of 30 forms of rodents and rabbits that have been found plague-infected. Bibliography of 13 titles.

Diseases and Parasites: Psittacosis

Meyer, K. F. Psittacosis, The Auk (Rudyerd Boulton, Field Museum, Chicago, Ill. $1.00 a copy), 57(3), July 1940, pp. 330-332.

A peculiar type of pneumonia among inhabitants of the Faroe Islands has been identified with psittacosis; it is endemic in young Atlantic Fulmars. This article presents a list of birds (43) known to be spontaneously infected with psittacosis and discusses spread of the disease among humans.

Diseases and Parasites: Rodent-borne disease

Anon. An unidentified disease in Nevada believed to be transmitted by rodents, U. S. Public Health Reports (Supt. of Documents, Washington, D. C. 5 cents a copy), 55(22), May 31, 1940, p. 988.

Occurrence in Ruby Valley, Nevada; description of symptoms of a disease of man that may be acquired from muskrats or beavers.

Diseases and Parasites: Tick, cattle-fever

Knapp, J. V. Existence of tropical variety of cattle-fever tick (Boophilus annulatus var. australis) complicates tick eradication, Journ. American Veterinary Medical Assoc. (221 N. La Salle St., Chicago, Ill. 75 cents a copy), 96(758), May 1940, pp. 607-608.

Synopsis of Florida law relative to cattle dipping. Tick eradication progressed satisfactorily until the deer-tick infested game preserves of Orange County were reached in 1931. There, while the program was halted, it was learned that the tropical variety of the cattle-fever tick propagates on deer as well as on cattle. It was evident that the deer must be removed to effect tick eradication. After necessary legal preliminaries, the deer were killed in 1938. Further authorization was obtained from the legislature to eliminate deer in Collier and Hendry counties and this work began in 1939. The Department of the Interior, however, refused to permit the killing of deer on the Seminole Indian Reservation in Hendry County, thus maintaining "a reservoir of cattle-fever ticks capable of spreading not only to the cattle of Florida, but to adjoining States as well." Bibliography of 6 titles.

Diseases and Parasites: Trauma

Long, William H. Traumatology in wildlife management, American Wildlife (Investment Bldg., Washington, D. C. 25 cents a copy), 29(2), March-April 1940, pp. 88-92.

Mortality of game birds from crippling gunshot wounds; lesions, symptoms; treatment of birds recovered alive. A high percentage of crippled birds die but under laboratory treatment some disabled birds can be saved.

Diseases and Parasites: Trematoda, Collyriclum

Beaudette, F. R. A case of Collyriclum faba infestation in a purple finch, Journ. American Veterinary Medical Assoc. (221 N. La Salle St., Chicago, Ill. 75 cents a copy), 96(756), March 1940, pp. 413-414.

Summary of knowledge of this fluke; citation of 6 sources of information. Several species of wild birds are involved to which the author adds that named in the title of his communication. Description of the external cysts from which specimens were taken.

Diseases and Parasites: Trematoda, Neoronifer

Schmidt, Fred L., and W. Eugene Hubbard. A new trematode, Neoronifer serpentis, from the water moccasin, American Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 23(3), May 1940, pp.729-730, 1 fig.

From Lewisville, Ark.; description, illustration; comparative notes.

Diseases and Parasites: Trematoda, Schizostoma

Brackett, Sterling. Studies on schizostome dermatitis: V, Prevalence in Wisconsin, American Journ. Hygiene (615 North Wolfe St., Baltimore, Md. Single number of a section $1.00), 31(3), May 1940, Section C, pp. 49-63, 1 map, 4 tables.

Discussion of schizostome cercariae as the cause of "swimmer's-itch," with list of birds examined for schizostome adults and a tabulation of 10 species in which they were found. There is also a table naming the kinds of schizostomes known from vertebrates that occur in Wisconsin.

Diseases and Parasites: Tularemia

Anon. Tularemia, U. S. Public Health Reports (Supt. of Documents, Washington, D. C. 5 cents a copy), 55(16), April 19, 1940, pp. 667-670.

The number of human cases and the number of deaths is increasing, indicating that further publicizing of methods of avoidance is required. The 1939 record is around 2,200 cases and 150 deaths; the disease is known in every State and the sources of human infection have been traced to 24 forms of American wildlife. Wild rabbits and hares are the direct cause of more than 90 percent of the human cases. Several other forms of wildlife are mentioned. Legislation designed to check the spread of tularemia by restricting the purchase and sale or handling of wild hares and rabbits has been enacted in at least 3 States--Connecticut, New Hampshire, and Ohio.

Diseases and Parasites: Tularemia

Davis, Gordon E. Bacterium tularense: its persistence in the tissues of the argasid ticks Ornithodoros turicata and O. parkeri, U. S. Public Health Reports (Supt. of Documents, Washington, D. C. 5 cents a copy), 55(16), April 19, 1940, pp. 676-680, 3 tables.

Report on laboratory studies. Author's conclusions: "1. Bact. tularense may survive for at least 674 and 701 days, respectively, in the tissues of Ornithodoros turicata and O. parkeri, but is not transmitted during feeding. 2. The virulence of the organism was not adversely affected by the long period of residence in these ticks nor by the failure of the ticks to receive a blood meal."

Diseases and Parasites: Tularemia

Hammersland, H. L., and E. M. Jonoschild. Tularemia in a beaver, Journ. Amer. Veterinary Medical Assoc. (221 N. La Salle St., Chicago, Ill. 75 cents a copy), 96(754), Jan. 1940, pp. 96-97, 1 photo.

Montana; post-mortem findings; details of laboratory identification.

Diseases and Parasites: Tularemia

Scott, John W. Natural occurrence of tularemia in beaver and its transmission to man, Science (Lancaster, Pa. 15 cents a copy), 91(2359), March 15, 1940, pp. 263-264, 1 table.

Numerous dead beavers were found in Sheridan County, Wyoming, in the fall of 1938; autopsy of one of them resulted in a tentative diagnosis of tularemia. Two persons handling the animals contracted the disease; their experience is described.

Diseases and Parasites: Of game birds

Cowan, Ian McTaggart. Two apparently fatal grouse diseases, Journ. Wildlife Management (Frank C. Edminster, Soil Conservation Service, Upper Darby, Pa. 75 cents a copy), 4(3), July 1940, pp. 311-312, 1 pl.

Author's abstract: "In 1938-39 on Vancouver Island, British Columbia, outbreaks of two apparently fatal diseases occurred among game birds. Ruffed grouse (Bonasa umbellus sabini) and California quail (Lophortyx c. californica) were found with heavy infestations of the mite Cnemidocoptes mutans involving the legs, feet, and sometimes the breast skin. Advanced cases showed great hypertrophy of the dermal and epidermal tissue of the feet and legs, followed by ulceration and sloughing of the digits. Sooty grouse were found to have apparently contagious malignant skin tumors on the head. Beginning in the naked areas about the eyes and beak the tumors spread until the eyes were occluded and death followed. These tumors were diagnosed as low grade papillary carcinomata."

Diseases and Parasites: Of game birds

Shillinger, J. E., and Don R. Coburn. Diseases of game birds, in Poultry Practice (Veterinary Magazine Corporation, Chicago, Ill. 160 pp., illus. 1940. $1.00 a copy), pp. 143-145.

Practically all of the common diseases of poultry may infect game birds. They are seldom observed in the wild but are a serious problem on game farms. Avian tuberculosis, ulcerative enteritis (quail disease), rhinitis (snuffles), enterohepatitis (blackhead), coccidiosis, trichomoniasis, nutritional deficiency diseases, and cannibalism are discussed, including notes on symptoms and suggestions for treatment.

The essays in this book have been or are to be printed in the magazine Veterinary Medicine (7632 S. Crandon Ave., Chicago, Ill. 50 cents a copy). That here abstracted appeared in Vol. 35, No. 1, Feb. 1940, pp. 124-127. The article by Everett E. Wehr on "Nematodes of domestic fowls transmissible to wild game birds," from Veterinary Medicine for January 1940, abstracted in WILDLIFE REVIEW, No. 27, May 1940, p. 9, forms the chapter preceding that by Shillinger and Coburn in the book cited, of which it forms pp. 136-142.

Diseases and Parasites: Of rats

Herman, Carlton M. A parasitological survey of wild rats in the New York Zoological Park, Zoologica (New York Zoological Park, New York, N. Y.), 24(3), Nov. 1939, pp. 305-308, 1 table.

Synopsis of previous American surveys of rat parasites. Statement of methods in the present investigation and of results which are also tabulated. Two hundred rats were examined and 2 species of protozoans, 2 of nematodes, and 3 of cestodes found. One of the nemas (Capillaria hepatica) occurred in 91.5 percent of the adult rats. "No parasites were found in 52.5% of the young rats while only 5.6% of the adults were free from infection."

Ecology: Animal relations to soils

Jacot, Arthur Paul. The fauna of the soil, Quarterly Review of Biology (Williams and Wilkins Co., Baltimore, Md. $1.50 a copy), 15(1), March 1940, pp. 28-58.

Review of its subject accompanied by a bibliography of 104 titles. The matter on vertebrates fills about 2-1/2 pages. Mammals influence the soil by manuring, trampling, mixing, and channelling; and birds by manuring and scratching; instances are cited. The reptiles and batrachians receive briefer treatment. The bibliography is notably incomplete but the editor states that it was to have been enlarged, a plan terminated by the death of the author.

Ecology: Census methods

Graham, Samuel A. The intersection method of counting animals, Journ. Wildlife Management (Frank C. Edminster, Soil Conservation Service, Upper Darby, Pa. 75 cents a copy), 4(3), July 1940, pp. 313-314.

Author's abstract: "This paper describes a method of enumerating by the intersection of lines drawn from known points in the direction of sounds produced by the animals. Use of the method is illustrated by tests made in locating drumming grouse. Although it is not always possible to be certain of the direction from which a sound emanates when it is heard only once, repetitions practically always clear up any doubts. For grouse and most other birds, observations must be made before daylight because after dawn the animals may move about and drum from various locations."

Ecology: Census values

Pulling, Albert Van S. The animal "census," Journ. Wildlife Management (Frank C. Edminster, Soil Conservation Service, Upper Darby, Pa. 75 cents a copy), 4(3), July 1940, pp. 327-329.

Author's abstract: "There is doubt as to the accuracy of the term 'census' as applied to wild animals, the author preferring 'estimate' to 'census.' The name, however, is not important and the 'census' itself may not

be. This is especially true if little is done about the 'census' after it is made. The terms 'saturated', 'abundant', 'common', 'rare', or 'scarce', 'remnantal', and 'exterminated' are suggested as alternates to numbers, with ecological site factors to show optimum habitat capacity. The futility of 'censusing' cyclic forms is stressed, admitting that a maximum of scientific effort has been spent on the highly cyclic grouse. There is a hint that some budding game managers have made counts because they did not know what else to do. Training is urged to make it possible for game managers to read 'sign' like the old trapper, and estimate abundance along with carrying capacity. Correct observations and intelligent interpretation of those observations are the bases of all conservational science. If wildlife specialists learn to observe animals and to interpret animal signs in a specific environment, the hypothetical barometer of population will tell the numbers well enough for all ordinary management purposes, and the effort toward a 'census' may be quite unnecessary."

Ecology: Insects of the forest floor

Kulash, Walter M. Insects of the forest floor available as food for game animals, Journ. Forestry (Mills Bldg., Washington, D. C. 50 cents a copy), 38(7), July 1940, pp. 554-557, 1 table.

Report on the insects found in litter in samples taken at weekly and bi-weekly intervals in 6 types of forest cover. The numbers of insects and spiders in the samples and estimated population per acre (excluding spring-tails, psocids, and thrips) are tabulated. The estimates vary from less than a million (larch type) to nearly five millions (alder bottom type). The insect-eating warm-blooded vertebrates of the locality (Mt. Toby, Mass.) are listed and their probable predation on the forest-floor insects discussed. Bibliography of 8 titles (which does not include important works by Jacot and Wolcott).

Ecology: Overgrazing

Smith, Charles C. The effect of overgrazing and erosion upon the biota of the mixed-grass prairie of Oklahoma, Ecology (Prince and Lemon Sts., Lancaster, Pa. $1.50 a copy), 21(3), July 1940, pp. 381-397, 22 tables.

Of interest to wildlife managers are the sections on birds and mammals and the author's recommendations for deferred rotational grazing. Birds of the undisturbed prairie do not persist long under conditions produced by over-grazing. Overgrazed pastures were resorted to for feeding, however, probably on account of the increased population of grasshoppers. Moderately grazed prairies were found to have a larger number of nesting meadowlarks than undis-turbed prairie. [Nesting success was not determined.] Burrowing mammals were more tolerant of conditions produced by overgrazing than are forms living wholly above ground. "The total number of species of small mammals is greatest in undisturbed prairie and least in overgrazed and eroded areas. The least abundance of all small mammals is reached in the severely overgrazed but uneroded areas and again increases when erosion begins and new plants invade

the community. Animals favored by a sparse, weedy vegetation show their greatest abundance on the eroded areas. In this group are found deer mice, pocket mice and cottontail rabbits. Ground squirrels and jackrabbits are especially favored when the taller grasses are eliminated from the vegetation, leaving a dense mat of short grasses and clumps of forbs. When overgrazing kills out much of the short grass, broomweed becomes the dominant species of plant. Under such conditions the number of jackrabbits decreases." Bibliography of 14 titles.

Ecology: Populations, mouse, jumping

Blair, W. Frank. Home ranges and populations of the jumping mouse, American Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 23(1), Jan. 1940, pp. 244-250, 1 table.

Study of Zapus h. hudsonius in Michigan, reported under the headings: ecological associations, methods, sex ratio (about even), breeding (spring and autumn seasons), preparation for hibernation, home ranges, and populations. The average size of home ranges (which overlapped considerably) was about .9 acre for both sexes. From 1 to 29 individuals were live-trapped weekly on nine acres of bluegrass association; the average period of residence was 3 weeks.

Ecology: Populations, shrew, short-tailed

Blair, W. Frank. Notes on home ranges and populations of the short-tailed shrew, Ecology (Prince and Lemon Sts., Lancaster, Pa. $1.50 a copy), 21(2), April 1940, pp. 284-288.

Report on a trapping study in Livingston County, Michigan. Description of the environment, methods of work, notes on mortality in the traps (25-30 percent the first night, little thereafter), sex ration (51:49), and breeding. The home ranges varied from less than an acre for females to 4.43 acres for a male. Populations in late summer varied from 0.8 to 2.2 individuals per acre. Bibliography of 10 titles.

Ecology: Short grass plains

Larson, Floyd. The role of the bison in maintaining the short grass plains, Ecology (Prince and Lemon Sts., Lancaster, Pa. $1.50 a copy), 21(2), April 1940, pp. 113-121.

Review of evidence as to the numbers of bisons which the author thinks were great enough to cause overgrazing. The effect of these animals was, therefore, the same as that of the cattle that replaced them. As the buffalos were part of the original biome, the prevalence of short grass which they brought about must be considered as a climax condition, not as an unnatural one due to livestock. Bibliography of 23 titles.

Economics: Beaver

Anon. Beavers water his cattle, Capper's Farmer (Capper Publications, Inc., Topeka, Kans. 5 cents a copy), 51(4), April 1940, p. 64.

A farmer in Wheeler County, Texas, is quoted to the effect that he would have to spend at least $1,000 for wells if it were not for the beavers making stock-watering places by their dams. Live beavers are worth from $100 to $150 a pair for stocking purposes. In some places the animals' tree-cutting may be objectionable but where they live on small willows on stream banks, beavers help to keep down the growth so the land can be grazed.

Economics: Beaver

Gustin, Wade M. Beaver pay for life with tax-free dams, Western Farm Life (1520 Court Place, Denver, Colo.), 42(9), May 1940, p. 9.

Depleted beaver habitat in the northwest is being restocked, the animals are taking hold, and building "hundreds of dams" that will provide more irrigation water for the farmers of Idaho, Oregon, Washington, and Montana. "Each beaver, if properly placed is worth $300 x x x according to Idaho Game Director Owen W. Morris."

Education: Conservation

Anon. Boy Scouts in conservation, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 11(4), July 1940, pp. 13, 16, 32, 2 photos.

Notes on scout activities in posting signs, building bird houses and game shelters, planting willows, and feeding wildlife in winter, with suggestions on what to do and how to do it.

Education: Conservation

Calhoun, W. T., et al. Conservation and the Wisconsin teacher, Wisconsin Conservation Bul. (Wisconsin Conservation Dept., Madison), 5(4), April 1940, pp. 47-66, illus.

Educational suggestions, references to materials, and news notes under the following main headings: "Let's make bird life interesting to boys and girls," "A truly successful bird project," "Why not form a junior Audubon Club?" and "Teaching conservation in the senior high schools."

Education: Conservation, in 4-H clubs

Marston, Burton W. Wild life and the 4-H clubs, Wyoming Wild Life (Wyoming Game and Fish Commission, Cheyenne), 5(6), June 1940, pp. 4-5.

For 4 years Wyoming girls and boys of 10-20 years of age have participated in wildlife activities of the 4-H Club program and learned about conser-

vation at Club meetings and camps. Some of the projects engaged in are the rearing of pheasants and fishes, and the making of exhibit collections of native shrubs, wild flowers, and insects.

Food Habits: Deer damage

Dale, Bonnycastle, Jr. Too many deer, Rod and Gun in Canada (1224 St. Catherine St., W., Montreal, Canada. 10 cents a copy), 42(1), June 1940, pp. 15-37, 3 photos.

Subtitle: "To farmers and orchardists the white-tailed deer has become a rampant pest." The animals were introduced into Nova Scotia in 1894 and were totally protected for 22 years, during which period they increased and spread to all parts of the Province. Farmers demand their extermination. The reported legal kill since 1916 is well over 37,000 animals, poaching has accounted for a great many, and bears and bobcats take a toll. Damage continues, however, and preventive measures have little effect. A fence with strands of barbed wire spaced 4-6 inches up to the 4-foot level, and 10 inches apart from that height to the top of 6 and 7 foot posts protected a garden. Potatoes, carrots, and other vegetables, and orchard trees are damaged. The animals have direct and indirect economic values, however, that should be taken into consideration in connection with the formulation of public policy toward them.

Food Habits: Nutritional requirements, mink

Smith, S. E., and J. K. Loosli. Some nutritional studies with mink, National Fur News (444 Seventeenth St., Denver, Colo. Monthly, $1.00 a year), 12(4), May 1940, pp. 3, 14.

Progress report on studies by the Biological Survey and cooperators; 6 adult minks on a diet free from vitamin C for a year showed no sign of scurvy; food may traverse the alimentary tract of a mink in 15 hours; raw meats are better digested than canned products; fats from all sources, however, are well digested; starch is digested but seems to cause diarrhea; vitamin D and an adequate supply of phosphorus and calcium are required for proper bone building.

Food Habits: Nutritive value of deer antlers

Chaddock, T. T. Chemical analysis of deer antlers, Wisconsin Conservation Bul. (Wisconsin Conservation Dept., Madison), 5(6), June 1940, p. 42.

Antlers shed annually in large numbers are rarely found, hence it is assumed that they are eaten, most probably by rodents. Analysis of an antler from a 3-year buck is given. It shows that common salt is not the attraction. "It is very interesting to note from the analysis that three important constituents in the deer antlers would be of food value. They are protein, 34.50%; phosphoric oxide, 19.28%; and calcium oxide, 25.26%. It would be readily possible for a rodent to find a food that would be fairly high in protein, such as nuts and grains, but those that are high in available calcium and phosphorus are not abundant. Since rodents are equipped with an excellent set of

incisors, they are capable of devouring these antlers quite easily, while other animald are not."

Food Habits: Nutritive value of deer browse

Hellmers, Henry. A study of monthly variations in the nutritive value of several natural winter deer foods, Journ. Wildlife Management (Frank C. Edminster, Soil Conservation Service, Upper Darby, Pa. 75 cents a copy), 4(3), July 1940, pp. 315-325, 1 pl., 8 figs., 8 tables.

Author's abstract: "Samples of eight species of woody plants browsed by deer were collected at monthly intervals and analyzed chemically to detect variations in their composition. Marked differences were found, especially in protein, nitrogen-free extract, and crude fiber, all of which exhibited trends indicating reduction in nutritive value of the plants through the winter. As a result of this study, it is believed that a representative index to the nutritive value of winter browse may be most easily and most satisfactorily obtained by collecting material monthly and analyzing composite samples made by mixing the original samples of each species in equal proportions. The samples should be collected at least in duplicate, so that errors in sampling may be revealed. This method tends to reduce errors that would be caused by fluctuations and seasonal trends. A few of the species analyzed compared very favorably in chemical composition with bluegrass and timothy. Most species, however, were considerably below these grasses in nutritional qualities."

Food Habits: Utilization of mast

Shaw, Earl B. Geography of mast feeding, Economic Geography (Clark University, Worcester, Mass. $1.50 a copy), 16(3), July 1940, pp. 233-249, 11 figs.

An article of interest to wildlife managers as indicating the prevalence and distribution of mast-feeding of hogs. Deer as competitors and wolves as predators are incidentally mentioned. A map (Fig. 8) shows the principal mast-feeding areas in the United States, including chiefly northern California, the Ozark and Appalachian regions, and the longleaf pine area.

Food Habits: Of deer, white-tailed

Ward, Henry B. [Deer feeding habits], Virginia Wildlife (Blacksburg, Va.), 3(10), June 1940, p. 5.

Showing special relish for peach tree browse, Naushon Island, Mass.

Food Habits: Of eagle, bald

Muric, Olaus J. Food habits of the northern bald eagle in the Aleutian Islands, Alaska, The Condor (W. Lee Chambers, 2068 Escarpa Drive, Eagle Rock, Calif. 50 cents a copy), 42(4), July-Aug. 1940, pp. 198-202, 2 tables.

Remains of prey collected about nests in 1936 and 1937 were identified; the determinations and frequencies of occurrence are tabulated in this article. Birds preponderate in the eagle's diet, with mammals, and fishes next. Reference is made to the payment of bounties on eagles in Alaska. Depredations are discussed and the opinion expressed that in the Aleutian chain the bald eagle is "harmless so far as man's commercial interests are concerned."

Food Habits: Of English sparrow

Kalmbach, E. R. Economic status of the English sparrow in the United States, U. S. Dept. of Agriculture, Technical Bul. 711 (Supt. of Documents, Washington, D. C. 15 cents a copy), 66 pp., 3 pls., 7 figs., 7 tables, June 1940 (July).

Although including discussion of the introduction and spread, and of the general habits of the bird, this publication deals chiefly with the economic tendencies of its food habits. The study was based on examination of about 8,000 stomachs, far more than have been available for any other economic report on a single species. Food is discussed under numerous categories of which "feed" or grain picked up about poultry yards, corrals, and similar places is the largest single item in the annual diet (nearly 60 percent). The only other items that bulk at all impressively are oats (other than those in feed) and grass and weed seeds. The birds are so numerous locally that consumption of minor foods may assume importance. Favorable local variations in feeding habits are exemplified. The dietary changes rapidly from a 90 percent animal basis during the first 3 days of life to 50 percent at a week of age. The contrast between nestling and adult rations is fully discussed. The quantity of food eaten; the rapidity of digestion; distribution of diseases, parasites, and insect pests; competition with native birds; and factors controlling abundance, also are considered. There is a bibliography of 42 titles.

Author's conclusion: "It would have been better for the interests of American agriculture, as well as for the welfare of the native birds, had the English sparrow never been introduced; but now that it has long been established beyond the possibility of eradication, it must be dealt with accordingly. Control measures, though often called for, should always be limited to the need of the occasion. The dictates of sound economy demand this; but it is well to restate one of the findings of this study, namely, that at times the English sparrow has been an aid in local insect suppression. There is likelihood that such conditions will again arise."

Comment: A difficulty in connection with control of English sparrows that should never be forgotten is that the public practically does not distinguish this so-called sparrow from numerous species of native finches. Highly selective methods should, therefore, always be sought.

Food Habits: Of gull, Franklin's

Saugstad, Stanley. Feeding habits of the Franklin's gull in North Dakota, North Dakota Agr. Expt. Sta. (Fargo) Bi-monthly Bul. 2(5), May 1940, pp. 14-16, 2 figs.

Review of previously published information and report on 10 crop and gizzard contents. The food in the latter was chiefly grasshoppers. Biological Survey refuges have increased the number of birds in the State and the gulls have a useful but not controlling influence on the numbers of the principal insects they consume.

Food Habits: Of hawk, sharp-shinned

Munro, J. A. Food of the sharp-shinned hawk, The Condor (W. Lee Chambers, 2068 Escarpa Drive, Eagle Rock, Calif. 50 cents a copy), 42(3), May-June 1940, pp. 168-169, 1 table.

List of 13 species of birds and one of mammal identified from pluckings near a nest; also report on examination of the stomachs of 3 nestlings containing only bird remains.

Food Habits: Of jay, blue

Gesell, Arnold. Blue jay: brigand or benefactor, Scientific Monthly (Lancaster, Pa. 50 cents a copy), 50(6), June 1940, pp. 540-542.

Popular article mostly on the blue jay's utilization of nuts and acorns with extracts from publications and letters.

Food Habits: Of mammals, small

Hamilton, W. J., Jr., and David B. Cook. Small mammals and the forest, Journ. Forestry (Mills Bldg., Washington, D. C. 50 cents a copy), 38(6), June 1940, pp. 468-473, 1 fig., 2 tables.

Certain references to the utility of small mammals through their feeding habits are available but in general the subject has been neglected. The authors name the common small mammals of northeastern forests, briefly describe their habits, and summarize information on their populations. It is estimated that a population of 100 individuals of the 6 most constant species could consume 266 pounds of insects per year. The number of insects might approximate 10,000 to the pound. Because of their far larger numbers, small mammals are doubtless of greater economic importance than the birds. Improvement of soil and providing food for fur animals are other useful roles of the small mammals. Suggestions are given as to how these animals may be favored in forests. Bibliography of 20 titles.

Food Habits: Of newt

Hamilton, W. J., Jr. The feeding habits of larval newts with reference to availability and predilection of food items, Ecology (Prince and Lemon Sts., Lancaster, Pa. $1.50 a copy), 21(3), July 1940, pp. 351-356, 2 figs., 2 tables.

Comparison of results of analyses of 300 random samples of available food items with those of a like number of stomach contents. The larval newts were most interested in active organisms; leading categories were ostracods, chironomid larvae, and small univalves and bivalves. The data indicate "that the newts feed upon small macroscopic organisms in direct ratio to their availability and accessibility." Bibliography of 7 titles.

Food Habits: Of owl, barn

Davis, Wm. B. Another heavy concentration of Cryptotis in Texas, Journ. Mammalogy (Wm. B. Davis, A. & M. College, College Station, Texas. $1.00 a copy), 21(2), May 1940, pp. 213-214, 1 table.

Of 152 animals represented in 25 pellets, 102 were Cryptotis parva. One pellet contained remains of 20 Cryptotis and of 4 other small animals. All food items identified are listed; 11 are birds.

Food Habits: Of owl, barn

O'Reilly, Ralph A., Jr. Beneficial feeding habits of the barn owl, Cleveland Bird Club (Cleveland Museum of Natural History, Cleveland, Ohio), 36(2), March-May 1940 (July), pp. 8-9, mimeographed.

Seventy pellets collected near Brookville, Ohio, in the summer of 1939 contained only mammal remains to the number of 136, of which 104 were those of meadow voles.

Food Habits: Of owl, great horned

Bond, R. M. Food habits of horned owls in the Pahranagat Valley, Nevada, The Condor (W. Lee Chambers, 2068 Escarpa Drive, Eagle Rock, Calif. 50 cents a copy), 42(3), May-June 1940, pp. 164-165, 1 table.

Report on contents of 234 pellets collected at a nesting site. Numerically, mammals constituted 96.81 percent of the prey individuals identified and birds 3.19 percent. Meadow mice were by far the most numerous single item.

Food Habits: Of owl, short-eared

Moulthorp, Philip N. Lost Nation Road short-eared owl hunts the open fields, Cleveland Bird Club (Cleveland Museum of Natural History, Cleveland, Ohio), 36(2), March-May 1940 (July), p. 9, mimeographed.

Pellets, number not stated, presumably from near Cleveland contained remains of 222 mammals, 138 of them meadow voles, and of 4 birds.

Food Habits: Of pheasant, ring-necked

Grimmer, W. F. Food habits of the pheasant in Wisconsin, Wisconsin Conservation Bul. (Wisconsin Conservation Dept., Madison), 5(4), April 1940, pp. 10-13.

Summary of published information on the food of the bird in its native home, and in various States of the U.S.A. Report on contents of 8 crops and 4 gizzards of Wisconsin birds, including lists of seeds and fruits identified. The bird is regarded as doing good through its food habits.

Food Habits: Of rabbit, European

Eden, A. Coprophagy in the rabbit, Nature (St. Martin's St., London, W. C. 2, England. 1 shilling a copy), 145(3662), Jan. 6, 1940, pp. 36-37.

The relation of coprophagy to physiological experiments; apparently this habit may involve from 54 to 82 percent of the feces.

Food Habits: Of rabbit, European

Southern, H. N. Coprophagy in the wild rabbit, Nature (St. Martin's St., London, W. C. 2, England. 1 shilling a copy), 145(3668), Feb. 17, 1940, p. 262.

This habit, noted in captivity, is indulged in also by wild rabbits; instances are described. It is suggested that the practice may aid the animals to survive when forced to remain in their burrows. They are known thus to lie up for periods as long as a week.

Food Habits: Of rabbits

Pearce, John, and L. H. Reineke. Rabbit feeding on hardwoods, U. S. Forest Service, Northeastern Forest Expt. Sta. (New Haven, Conn.) Technical Note 35, 3 pp., 4 tables, mimeographed, June 1940.

Observations in plantations in Massachusetts showed that cottontail "rabbits distinctly prefer Kentucky coffee tree, honey locust, and hardy catalpa to black locust, hackberry, and red mulberry, this preference being reflected by both frequency and intensity of feeding." In a natural stand in Maine "the avoidance of balsam fir," by snowshoe rabbits, "was so complete that a positive aversion to the species may be indicated. Paper, gray, and yellow birches were avoided almost as completely as the fir, while pin cherry and witch-hazel held rather small attraction. x x x beech and the three maples [sugar, red, striped] were definitely preferred to birches, fir, and others." Serviceberry was invariably gnawed. The results of the studies are presented also in tabular form.

Food Habits: Of squirrel, red

Hayward, C. Lynn. Feeding habits of the red squirrel, Journ. Mammalogy (Wm. B. Davis, A. & M. College, College Station, Texas. $1.00 a copy), 21(2), May 1940, p. 220.

Tamasciurus hudsonicus ventorum extracting seeds from cones of Douglas fir (Pseudotsuga macronata).

Food Habits: Of weasel, mountain

Bryant, M. D. Habits of the mountain weasel, Yosemite Nature Notes (Yosemite National Park, Calif.), 19(5), May 1940, p. 36, 1 fig.

Mustela a arizonensis capturing ground squirrel (Citellus beldingi) and pocket gopher. Notes on territories and hunting methods.

Introductions: Goat, Rocky Mountain

Swift, Lloyd W. Rocky Mountain goats in the Black Hills, South Dakota Conservation Digest (South Dakota Game and Fish Dept., Pierre), June 1940, pp. 8-9, 1 photo.

From 2 or 3 animals that escaped from Custer State Park zoo in 1924 has built up a herd of 25. Their headquarters is Harney Peak.

Introductions: Partridge

Gorstoll, Richard. The Hungarian and chukar partridge[s]. Their status in Pennsylvania, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 11 (3), June 1940, pp. 3, 32, 1 photo.

Hungarian partridges first introduced by the Commission in 1925 were substantially established by 1929-30. An open season where the birds were most numerous was permitted in 1939. The bird appears to be a permanent reliance as a game species although it can hardly be depended upon except in areas primarily devoted to the production of small grains. The total cost of introduction is calculated at $131,000. The chukar partridges brought in during 1936 and 1937 rapidly dispersed and eventually disappeared. Private efforts to establish the species also failed.

Life Histories: Birds

Bent, Arthur C. Life histories of North American cuckoos, goatsuckers, hummingbirds, and their allies, U. S. National Museum Bul. 176 (Supt. of Documents, Washington, D. C. 75 cents a copy), 506 pp., 73 pls., 1940.

The 12th volume in this series which compiles published and unpublished contributions besides the author's personally gathered information in accounts of each species that deal with habits, nesting, young, plumages, food, voice, distribution and migrations, and other features of the life history so far as the material will permit. An indispensable boon to the working ornithologist.

Life Histories: Condor, California

Robinson, Cyril S. Notes on the California condor collected on Los Padres National Forest, California, U. S. Forest Service (address Regional Director, San Francisco, Calif.), 18 pp. (mimeographed), frontispiece, map, 1940.

Observations on the only considerable colony (about 50) of the birds now known as to appearance, habits (especially feeding), natural enemies, and man as an enemy. The present and former ranges of the species are discussed. Plans with respect to study and protection of the bird also are outlined.

Life Histories: Cottontail

Anderson, R. M. The spread of cottontail rabbits in Canada, Canadian Field-Naturalist (Wilmot Lloyd, 582 Mariposa Ave., Rockcliffe Park, Ottawa, Canada. 25 cents a copy), 54(5), May 1940, pp. 70-72.

Some invasion from a planting in New York, but mostly spread encouraged by clearing incidental to farming operations. In Manitoba the animals extended their range 250 miles northwest in 25 years. Details of the spread are given for various provinces and the subspecies concerned are named and briefly characterized.

Life Histories: Cottontail

Boule, John D. Cottontail nesting study in Pennsylvania, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 11(2), May 1940, pp. 10-11, 28, 3 figs.

Nesting activities were noted from April 6 to September 14; the largest numbers of nests were found in wastelands and in alfalfa; the cavities and nest structure are described: in 25 litters the numbers of young varied from 3 to 8, averaged 5.42; maternal care is discussed; nest destruction involved 9 of 25 nests, the chief agents being skunks and men; parasitism by a flesh fly destructive to the young is commented upon at some length. Bibliography of 9 titles.

Life Histories: Deer, Mule

McLean, Donald B. The deer of California, with particular reference to the Rocky Mountain mule deer, California Fish and Game (Terminal Island, Calif.), 26(2), April 1940 (Aug.), pp. 139-166, figs. 59-72.

Origin and characters of deer; distribution of the animals in the western hemisphere and in California (mapped); general statements as to migrations, life histories, predators, and diseases. The ranges in square miles, the percentage of the whole occupied, the average number of individuals per square mile, and the total population, of each of 6 forms are tabulated. More than four-fifths of the article is devoted to the mule deer, distribution, food habits, and antlers and pelage, receiving special attention. A report on a mule deer study deals more fully with sex ratios, age classes, migrations, rut, enemies, parasites, diseases, and less intensively with fawn habits, speed, stride, and jumping ability of adults, and reactions to scenting and sighting man. Bibliography of 15 titles.

Life Histories: Dove, Mourning

Moore, George C., and Allen M. Pearson. Mourning dove migrations from Alabama, Alabama Game and Fish News (Dept. of Conservation, Montgomery, Ala.), 11(12), June 1940, pp. 7, 13, 1 fig., 1 table.

Tabulation and map based upon 15 returns from some 2,400 banded birds. Maryland, Missouri, and Florida include the most distant points reached. In earlier days Federal protection of the mourning dove was challenged on the ground that the bird is not migratory; if there still be those unreconstructed on the point, this paper should help to win them over.

Life Histories: Dove, White-winged

Neff, Johnson A. Notes on nesting and other habits of the western white-winged dove in Arizona, Journ. Wildlife Management (Frank C. Edminster, Soil Conservation Service, Upper Darby, Pa. 75 cents a copy), 4(3), July 1940, pp. 279-290, 1 pl., 4 tables.

Author's abstract: "Besides nesting individually and locally, the white-wings gather into communities in the thick mesquite or tamarisk growth of the river bottoms; such colonies reported as numerous some years ago are now apparently rare; two, in which most of the observations were made, are described. Nests were studied by means of a mirror fixed to one end of a light pole cut into three four-foot sections and joined by ferrules. With this apparatus it was possible to classify with accuracy the contents of nests up to the heights of 18 feet above the ground. Mortality and predation are discussed. Interference by man and by Indian horses and cattle caused mortality as when disturbed the adults departed from nests so explosively that eggs and young were frequently dislodged. Tables summarize the contents of 661 nests. The season of nesting ranges from April 13 to August 27, with the young departing from the later nests by September 17. Apparently there are two distinct broods in the nesting thickets; young from the first brood were largely gone from the nests by July 1, while those of the second brood left the nests in late July and early August. In areas where conditions are unfavorable it appears that only one brood is produced. Nesting habitat, nest height, and nest structure are described. Two eggs is the usual set, although a small percentage contained one egg and one three-egg set was found. Measurements are given. The period of incubation ranged from 15 to 20 days; young left the nest at various dates, according to locality, from the 13th to 20th day after hatching. The development of the young and care of the young by the parents are discussed; both parents assist in rearing the squabs. Food of the young and habits of the juveniles after leaving the nest are described, especially the habit of well grown white-wing squabs ranging alone, and begging food from mourning doves rather than feeding themselves. Comments are added on roosting and on voice."

Life Histories: Ground squirrel, Piute

Alcorn, J. R. Life history notes on the Piute ground squirrel, Journ. Mammalogy (Wm. B. Davis, A. & M. College, College Station, Texas. $1.00 a copy), 21(2), May 1940, pp. 160-170, 1 fig., 3 tables.

Citellus townsendi mollis in Nevada. Notes on its use for food by the Indians, by whom its distribution possibly has been extended. Life history features treated are hibernation and aestivation, reproduction and fluctuation in numbers, activity of young, family and individual relations, swimming and climbing, burrows, food, enemies, and local migrations.

Life Histories: Grouse, Sage

Anon. The strutting sage grouse, Wyoming Wild Life (Wyoming Game and Fish Commission, Cheyenne), 5(6), June 1940, pp. 10-11, 3 photos.

Description and photographs of mating performance.

Life Histories: Mammals, Small

Burt, William H. Territorial behavior and populations of some small mammals in southern Michigan, University of Michigan, Museum of Zoology, Misc. Publ. 45 (Univ. of Michigan Press, Ann Arbor. 50 cents a copy), 58 pp., 2 pls., 8 figs., 12 tables, May 1940.

Report on a live trapping study in Livingston County of 6 species, fullest for the wood mouse (Peromyscus l. noveboracensis). Materials and methods and their efficiencies are first discussed; the animals were marked by an ear-punching and toe-clipping system capable of giving thousands of numbers. The longer accounts of the wood mouse and chipmunk treat habitat preferences, breeding, sex ratio, home sites, food storage, sociability, activity, home range, territorial behavior, homing instinct, dispersal, populations, longevity, and mortality. Shorter chapters are devoted to the flying squirrel, short-tailed shrew, pine mouse, and lemming mouse. Population estimates are considerably lower than those made by certain previous investigators whose errors are pointed out. The phases of territoriality are given a summary discussion. Bibliography of 30 titles.

Life Histories: Mice, Meadow

Hamilton, W. J., Jr. Life and habits of field mice, Scientific Monthly (Lancaster, Pa. 50 cents a copy), 50(5), May 1940, pp. 425-434, 10 figs.

Popular account of Microtus; under habits the author restates his finding that an individual may spend its entire life "on a plot not greater than a tenth of an acre." In feeding the animals take almost any vegetable and some animal materials. The animals may consume their own weight of green food in a day, and 100 mice to the acre might consume 300 pounds of a forage crop in a season. Population varies widely in a four-year cycle and at its peak may number from 200-300 mice per acre. Diseases and parasites appear to be the controlling agents. Mouse plagues and mouse predators are discussed, and the availability of meadow mice as objects of research is pointed out.

Life Histories: Otter, Sea

Murie, Olaus J. Notes on the sea otter, Journ. Mammalogy (Wm. B. Davis, A. & M. College, College Station, Texas. $1.00 a copy), 21(2), May 1940, pp. 119-131, 3 pls., 2 figs., 3 tables.

Report on studies in Alaska and California, especially full with respect to food habits. Sea urchins are by far the most important article of diet. The use of a stone as an anvil on which to break hard shellfish is described and illustrated. Breeding, care and habits of the young, herding, and hauling out are discussed. The sea otter does not feel at home on land and seldom goes there; its mode of walking is described and its tracks illustrated. Population recovery seems to be general and "with protection, these animals should become as abundant as in the past." The "Early life of a sea otter pup" is described by Edna M. Fisher in the succeeding article, pp. 134-137, 2 pls.

Life Histories: Starling

Allard, H. A. The starling's family life and behaviors, Journ. Washington Acad. Sci. (H. G. Ayers, Coast and Geodetic Survey, Washington, D. C. 50 cents a copy), 30(1), Jan. 1940, pp. 34-46, 4 figs.

Account of behavior as seen in a specially constructed observation nest-box: nest-building, incubation and brooding, feeding the young, nest sanitation, and making the bed. Reactions to extraneous material introduced into the box and social relationships also are described. Graphs show the time of arrival of starlings at Lyon Park, Va., in relation to dawn and of departure in relation to sundown. A general discussion of the observations concludes the paper, the final paragraph of which is here quoted: "A study of the starlings' behavior and family life indicates a very high order of bird intelligence throughout and a close attention to all phases of the family welfare. It is evident that the intimate understanding and cooperation of the two parents in all the stages of preparation for and the care of the family have helped to make the starlings highly adaptive and successful birds wherever conditions are favorable for their survival."

Life Histories: Walrus, Pacific

Collins, Gronold. Habits of the Pacific walrus (Odobenus divergens), Journ. Mammalogy (Wm. B. Davis, A. & M. College, College Station, Texas. $1.00 a copy), 21(2), May 1940, pp. 138-144, 1 table.

Range and migratory movements, breeding, habits, and enemies. The animal is described, its present abundance, and hunting and utilization are discussed. The annual kill is about 1,300 but belief is expressed that the species "is now holding its own and is in no present danger of extinction."

Management: Attracting birds

Murphy, Robert Cushman. How to attract and study birds, Compton's Pictured Encyclopedia, 1940, pp. 141-146, 9 illus.

Suggestions as to feeding stations and devices, nest building and bird houses, planting trees, shrubs, and vines, and as to bird study. There is a section also on protecting and conserving birds which discusses predatory animals and the balance of nature, Indians and the balance of nature, misuse of resources, the "inexhaustible" game supply of early days, birds that have vanished or dwindled, dangers of drainage, and the conservation movement.

Management: Beaver.

Shawver, Rowe. Brainy builder beaver, Western Sportsman (1009 Seventeenth St., Denver, Colo. 15 cents a copy), 5(3), Aug. 1940, pp. 6-10, 40, numerous photographs.

In 1887 when an estimated thousand beavers were all that survived in Colorado, the species was given protection that has continued to the present. In these 53 years, its numbers have increased to between 80,000 and 85,000. Beavers are now systematically trapped where troublesome and moved to other areas where they will be useful. Trapping and transporting methods are described and illustrated; the animals are placed 2 to 8 in a colony. They have proved useful in making pools in trout streams, in conserving water that could be used for irrigation, and in controlling erosion. Notes on habits of the animals and on their introduction to areas other than Colorado also are given.

An accompanying note by Clifford C. Spencer records in text and photographs the interesting fact that young beavers ride on the tail of the parent.

Management: Big game

Shantz, H. L. Necessary concepts in big game management, The Utah Juniper (Utah Agr. College, School of Forestry, Logan), 11, 1940, pp. 5-7.

"Maintenance of a varied and luxuriant vegetation is probably the best means of insuring a rich soil" of which wildlife is a product. "The first great essential in big game management is to see that food is available throughout the whole year" in relatively fixed ranges. Where food is insufficient, herds must be controlled; probably the most effective method is killing enough of all age and sex classes. Hunting that selectively removes the best animals should not be permitted. The public must be educated to the needs and objectives of wildlife management. Wildlife is a crop to be used and enjoyed and "must be properly managed by men trained to see the many inter-relations of plants, animals, soils, and human uses."

Management: Big game

Shantz, H. L. How best to manage herds of big game, U. S. Forest Service (Missoula, Mont.), 7 pp., mimeographed, 1940.

Good management of wildlife depends upon rational behavior of the special groups of people interested. Damage to range must be recognized and corrective steps taken before it is too late. Decision as to what must be done should be

left to men technically trained in this field, not assumed by essential amateurs as so often is the case. The history of big game herds under national forest management and of adjustment of grazing interests are traced. As a rule game cannot be moved; its numbers must be controlled locally in conformity with carrying capacity of the range. Methods of control are discussed along the lines of the paper involved in the preceding abstract. Prompt recognition of over-use of forage is important but it is a job for experts. The objectives of the Forest Service in wildlife management are stated (as summarized in WILDLIFE REVIEW No. 27, May 1940, p. 23) and discussed. National forest land, grazing land, and private land all must be embraced in balanced programs. Conservation alone results in overpopulations of some animals and proper use must be maintained. At the present time, only about a third of the deer crop is harvested by hunters, and better utilization should be obtained. Cooperation of interested groups is essential to success.

Management: Cottontail

Hickie, Paul. Cottontails in Michigan, Michigan Dept. of Conservation (Lansing), 112 pp., many figs., 6 charts, 9 tables, 1940.

Originally scarce and restricted in distribution, the cottontail, coincident with clearing of the country, increased and spread until at present it is the most important native game species of which more than 2,000,000 individuals are bagged by hunters annually. This bulletin is a compilation of previously recorded and of original information on the life history, population fluctuations, mortality from various causes including parasites and diseases (Chapter by S. C. Whitlock), harvesting, and management of the cottontail. Forty-six titles of literature cited are given besides a special reference list of food habit studies of predators (39 entries). A comprehensive and informative publication, the nearest to a cottontail management monograph that has yet appeared.

Management: Cover

Emerson, John L. The relation of Nebraska shelterbelt plantings to the State's wildlife, Nebraska Bird Review (1410 North 37th St., Lincoln, Nebr. 50 cents a copy), 8(1), Jan-June 1940, p. 30.

"On 46 shelterbelts in the Neligh, Kearney, Alliance, and Columbus, Nebraska, planting areas it was estimated that 936 Ring-necked Common Pheasants, 228 Prairie Sharp-tailed Grouse, 55 Greater Prairie Chickens, 67 Bobwhite Quails, 13 Chukar Partridges, and several hundred small insectivorous birds were using the plantings for cover and food. This estimate is based on the number of birds seen in approximately one per cent of the shelterbelts which have been planted in the state during the past five years. Consequently, when even a weighted average number of birds per planting is applied to the total of 2,526 miles, or approximately 5,000 individual plantings, which are established in Nebraska, an astonishing figure results. In all districts there are many indications that all types of wildlife are making increased use of the plantings, as the trees grow older and attain greater size. Badgers, coyotes, and foxes are moving into the belts. Large well-packed trails made in the snow by

pheasants and rabbits in nearly every planting of any size are definite indicators that the belts are used extensively."

Another article by Carroll F. Orendurff discussing in general terms "The relation of the farm shelterbelt to wildlife" is on pp. 1-4 of the same magazine.

Management: Estimating deer browse

Anon. White cedar for deer food, Lake States Forest Expt. Sta. (University Farm, St. Paul, Minn.) Technical Notes, 159, 1 p. (processed), May 1940.

Pounds of browse produced by the growth up to 7 feet above ground and by the entire tree of d.b.h. classes 1/4-12".

Management: Farm game

Bellrose, Frank C., Jr. Quail and pheasant studies in an orchard county, Illinois Natural History Survey (Urbana) Biol. Notes, 13, May 1940, 11 pp., 2 tables, mimeographed.

Calhoun County; ecology briefed; nesting in various sites and nest losses; both species were least successful in alfalfa fields and most successful in orchards; management suggestions are made.

Management: Farm wildlife

Edminster, Frank C. Is wildlife management worth while to the farmer?, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 11(3), June 1940, pp. 6-7, 29, 6 photos.

Reviewing the possible direct and indirect, tangible and intangible, values, the author concludes that "On the basis of the various economic values connected with wildlife, it is clear that wildlife management is seldom justified for the individual farmer on the basis of direct cash values. Even if other tangible values are included such as food obtained from game and business values, it is still doubtful if the average farmer can become very enthusiastic about expending time and money for wildlife benefits. It is thus clear that if wildlife management is confined to game management, the farmer will not ordinarily go very far out of his way to install recommended practices. However, if the farmer is encouraged to carry out wildlife management measures in order that he may reap the great variety of benefits which result from wildlife, his sincere attention can be attracted. Insect and rodent control certainly warrant much consideration on the part of the farmer. If his problems of artificial control can be lessened by biological controls, this means a saving to him of both time and money. It is also essential for every farmer to appreciate the conservation benefits that come with proper land management for wildlife. In addition to this, it is highly desirable that he participate in the social and business values although this may not be essential to attaining his interest."

On the other hand measures distinctly valuable in the maintenance of farm productiveness are beneficial to wildlife and it is in this secondary role that arguments for taking wildlife into consideration can be most logically advanced.

Management: Fur animals

Lay, Dan W. Management of fur-bearing animals on Texas farms and ranches, Texas Game, Fish, and Oyster Commission (Austin) Bul. 19, 8 pp., 1940.

Furs should be treated as a crop, the stock inventoried and production raised by attention to the food supply of fur bearers, protecting the animals, and increasing the number of dens for them. Suggestions are given as to the accomplishment of those ends, as well as on harvesting the fur crop. Bibliography of 9 titles.

Management: Game cooperative

Leopold, Aldo. History of the Riley Game Cooperative, 1931-1939, Journ. Wildlife Management (Frank C. Edminster, Soil Conservation Service, Upper Darby, Pa. 75 cents a copy), 4(3), July 1940, pp. 291-302, 2 figs., 1 table.

Author's abstract: "Summary of a decade of experience in the improvement of food and cover for pheasants on eleven farms in southern Wisconsin. Corn is fed in winter and costs $25. Natural winter cover occurs on only one per cent of the area, but artificial plantings of conifers, mostly red pine, have added another one per cent. Such plantings become effective by their fifth year. Cover too thin for winter but usable at other seasons occurs on 17 per cent of the area. Roadside debrushing has so far decreased cover faster than plantings have increased it. The area was stocked with pheasants in 1931 and about 100 have been stocked annually since. Shooting began in 1932, and has yielded a steady increase in bag. The bag is now 75 pheasants yearly. Banding shows that the bag consists largely of wild pheasants; only 10 per cent are from pen-raised stock. Restocking is no longer profitable, and costs could be reduced from $1.40 to 50 cents per bird in bag by discontinuing it. However, the shooting preserve law compels its continuance. The mounting kill is ascribed to decreasing dispersion, which in turn results from greater population pressure outside the area. No predator control is practiced. The author believes that the successful creation of a good stand of birds proves it to be unnecessary."

Management: General

Leopold, Aldo. The state of the profession, Journ. Wildlife Management (Frank C. Edminster, Soil Conservation Service, Upper Darby, Pa. 75 cents a copy), 4(3), July 1940, pp. 343-346.

Author's abstract: "This presidential address (Wildlife Society) reviews the status and trend of the profession of wildlife management. It contrasts science as an exercise of power with science as an exercise of wonder. It suggests that ecological drama is neglected as material for the fine arts. It laments the low proportion of private employment, and points out growing opportunity in land industries such as guano and furs. It reviews the defects of wildlife research, particularly the neglect of rodents and wild flowers, and urges more work on wildlife history. New alignments of extension and teaching are discussed. The author believes too many courses are for professionals and too few for the general under-graduate. The objective of the profession, once conceived to be the production of game, is now recognized to be the wholesale revision of land use."

Management: Herd regulation

Wallace, Frank. Keeping down the deer: a season's work in the forests, The Field (114 Fleet St., E.C. 4, London, England. 1 shilling a copy), 175(4562), June 1, 1940, pp. 846-847, 3 photos.

This report of the Deer Controller for Scotland deals with the red deer, a species more like our elk than like other American deer. The number of animals in Scotland is between 180,000 and 200,000. One head to 20 acres is all the average forest can carry, allowing a good margin for stock, sheep, hares, rabbits, etc. Carrying capacity is determined by the proportion of grazing below 2,000 or at most 2,500 feet. The ratio of stags shot to stag stock should be one in seven. As a war measure, hinds also are being killed. Estimated total numbers of the red deer and of the kill are given for the counties of Scotland. Proper disposition of the meat is discussed.

Management: Maryland Resettlement Project

Vaughn, Ernest A. The development of a wildlife restoration area on State forest lands in Worcester County, Maryland, Maryland Conservationist (514 Munsey Bldg., Baltimore, Md.), 17(2), Spring 1940, pp. 10-13, 25, 7 photos, 1 table.

Progress report on a project frequently referred to in WILDLIFE REVIEW, which may be consulted for a summary of the history of the project, a description of it, and an account of recent experiences with the wildlife, especially the bob-white, and with food patches. After rapid early increase, the bob-white population became comparatively stabilized at about 70 coveys on some 5,000 acres; the rabbit population also has remained more or less uniform from year to year. The article concludes with a series of answers to the questions that are most frequently asked about the project.

Management: Range

Booson, R. W., et al. Handbook for range managers, Region 5, U. S. Forest Service (San Francisco, Calif.), 212 pp., 33 figs., photos, 1940.

An attractive and well-prepared manual. The only mention of wildlife is in connection with beaver planting and control of rodents and predatory animals (pp. 183-184). Bears, mountain lions, and coyotes are specifically mentioned. From the account of the latter, the following is quoted: "While coyotes will occasionally kill young calves, the problem involves largely sheep and game animals. Losses of sheep are heaviest on lambing ranges but are often important on the summer range. On important game areas sheep losses drop off at the beginning of the fawning season. The job of the range manager is to secure data on the losses from this cause, study the local problem, and recommend to his supervisor the action needed. He must not lose sight of the fact that the coyote is an important factor in wild animal populations and his complete removal may have violent repercussions. He may have minor effect on small, rapid-breeding animals such as ground squirrels, but generally the effect of his absence on deer herds is more marked. In several areas in the West, the control of the coyote has been a major factor in deer herds increasing out of all bounds, resulting in a necessity for reduction in livestock numbers, damage on crop lands, and even severe competition with domestic livestock on ranches."

Management: Soil conservation in relation to wildlife

Jenkins, Hal. Conservation farming benefits our wildlife, Outdoor America (1167 Merchandise Mart, Chicago, Ill. 10 cents a copy), 5(7-8), May-June, 1940, pp. 4-5, 2 photos.

Discussion of the effect of soil conservation practices in increasing wildlife, based in part on the Dambach and Good article abstracted in WILDLIFE REVIEW, No. 26, Feb. 1940, pp. 30-31. Changes from cropland to meadow and protected woodland are especially beneficial. Planting of a 3-acre eroded area in Kentucky to black locust resulted the second year in the building of 23 birds' nests where previously there had been none. Soil Conservation Districts now number more than 200 and involve 120 million acres.

Management: Songbird

McAtee, W. L. An experiment in songbird management, The Auk (Rudyard Boulton, Field Museum, Chicago, Ill. $1.00 a copy), 57(3), July 1940, pp. 333-348.

Author's summary: "A bird-attraction project carried on for six years in Prince Georges County, Maryland, had for its primary objective increasing bird enemies of chestnut weevils. A threefold to fourfold increase in the bird population was easily attained but the nut weevils were not perceptibly reduced in numbers; their increase, however, may have been checked. Entomological and management results have been published in eight papers that are cited. This communication is devoted to the more strictly ornithological findings, including analyses of nest-building materials and of food remains found in the nests; and tabulations of the proportions of complete and incomplete nests, size of clutches and length of laying seasons, serial nestings in single boxes, nesting success, and nesting losses. The history of a Purple Martin colony also is briefly sketched." Bibliography of 8 publications on the project, one of which was abstracted in WILDLIFE REVIEW, No. 26, Feb. 1940, pp. 37-38.

Management: Stocking, cottontail

Cramer, Wilbur M. Pennsylvania's rabbit transfer program, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 11(2), May 1940, pp. 6-7, 31, 2 photos.

Account of transfer from overpopulated to underpopulated areas, giving numbers of animals moved each season since 1933-34 (30,000 in 1939-40), N.Y.A. and sportsmen cooperation, and costs. Some pheasants, squirrels, and raccoons also were handled. The author believes that "The rabbit trapping program is a part of good game management. It enables us to harvest a crop of game from areas where no hunting is permitted. Thus, an otherwise idle source of supply is wisely utilized. It enables us to secure the advantage of restocking game that normally would be at least partially destroyed by stray dogs and cats and other predators common to built up sections. This rabbit trapping relieves damage situations in nurseries and in orchards, as well as near gardens and truck patches. It also is aiding the Game Commission to build up a local rabbit supply that will help us to be self-supporting when the exportation of rabbits from other states is no longer possible."

Management: Stocking, partridge, chukar

[Nagel, Werner O., and Rudolf Bennitt]. The chukar partridge, Missouri Conservationist (Missouri Conservation Commission, Jefferson City), 2(4), May 1940, pp. 2, 7, 3 figs.

Of 86 species and subspecies of birds introduced into the United States, only 5 are widely established. Difficulties and objections connected with introductions are discussed. Stocking propagated birds for public shooting is "impossibly expensive" so introduced species must be put on the same basis of natural reproduction as are the natives. The introduction of chukars into Missouri received much more ecological guidance than is customary in such attempts, but "no area has yet been found in Missouri in which it appears that chukars will set up a stable, general, and self-supporting population."

Management: Wildlife, Texas

Taylor, Walter P. Texas should lead in game, The Cattleman (Fort Worth, Texas), 27(1), June 1940, pp. 47, 48, 49, 3 photos.

Advantages connected with its great extent, and good fortune in the preservation of remnants, at least, of a great variety of game species, give Texas opportunity to lead the nation in wildlife productivity and in associated economic values. To achieve that end the State should also lead in game research, should emphasize the place of wildlife in the land use program, should revise the game and fish laws and provide for their better enforcement, develop farmer-sportsman cooperation, and improve conservation education.

Management: Wildlife, Utah

Woodbury, Angus M. Planning for the conservation of Utah's wild life, Utah Educational Review (316 Beneficial Life Bldg., Salt Lake City, Utah), 30(4), Jan-Feb., 1937, pp. 173-174, 200.

All land use affects the fauna and flora and "If we are to have a reasonable balance between the economic, esthetic, and scientific needs it is imperative that special groups shall not have a dominant voice." Classification of Utah lands as to ecological types and notes on the agencies controlling and managing them. Comment on control operations and their probable effects. The author believes that natural conditions should be maintained with as little interference as possible. "The goal is the maximum production of desirable species." He makes suggestions for the management of the wildlife of a hypothetical tract of Utah mountain land. Bibliography of 6 titles.

Management: Wildlife, Utah

Woodbury, Angus M. Management of aquatic wildlife in the Great Basin, Scientific Monthly (Lancaster, Pa. 50 cents a copy), April 1940, pp. 307-322, 1 map, 17 photos.

Ecological conditions, both natural and artificial, affecting aquatic life; account of management including in our province the Biological Survey refuge on the Bear River marshes, especially in relation to wild fowl foods and diseases; note on State combined restoration and public shooting projects; beaver transplanting; mosquito control operations in relation to wildlife; and protection of fish-eating birds.

Management: Wildlife on recreational areas

Cahalane, Victor H. Some relationships of wildlife to the field of recreation, The Utah Juniper (Utah Agr. College, School of Forestry, Logan), 11, 1940, pp. 8-10.

Even in the presence of the greatest natural spectacles, no one is so absorbed as not to be interested in animal life. Human interest is not long sustained where wildlife is lacking. Wildlife is the basis not only of esthetic enjoyment but of sport. Fishing may be permitted in recreational reservations because fishes "can be replaced with facility and comparatively slight expense. Game birds and mammals are not so readily replaced so their hunting is much more sharply limited." Hunting is prohibited on all national parks and monuments and on most State parks. Nevertheless, wildlife there serves recreational uses and over and over again as it is not destroyed. Reservations kept in a natural state are favorable places to study wildlife not only as an end in itself but also in preparation for management. Difficulties arise in wildlife reservations chiefly through human contacts with the fauna. Management then requires regulation of the activities of people often for their own protection. "If wildlife and human use are to be combined successfully on recreational areas, the major essential is cooperation of all the technical men concerned."

Management: Winter feeding

Morton, James N. What Johnny Appleseed did for wildlife, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 11(4), July 1940, pp. 6-7, 4 figs.

Value of cull apples and of pomace from cider mills in winter feeding.

Natural History: Aquatic plants

Fassett, Norman C. A manual of aquatic plants (McGraw-Hill Book Co., 330 West 42rd St., New York, N. Y. $4.00 a copy), vii+382 pp., copiously illustrated, 1940.

The intent of the author was to provide keys and "illustrations for macroscopic plants which normally grow in water (saline, tidal, and bog habitats excluded) from Minnesota to Missouri and eastward to the Atlantic. Part I is a key based on vegetative characters for identifying aquatic plants. Part II gives a taxonomic treatment of all the plants. A feature of the book is the key to sterile plants." The author adds that "the text is essentially a set of directions for looking at the pictures." The work throughout shows the impress of Dr. Fassett's thoroughness; in the very essential factor of illustrations (the best yet made of American aquatics), he has had the assistance of a number of individuals, some of whom worked "in large part without recompense." The book should be highly useful to all who work with aquatic plants in wildlife management in the region covered. Besides direct utility it has the merit of a guide to recent supplementary literature which is cited and briefly abstracted in connection with the sections concerned. In the appendix are found a chapter on the use of aquatic plants by birds and mammals with a special index, and another on the relation of plants to fishes (each accompanied by a bibliography), and a glossary of technical terms. There is also a full general index. An excellent book which could usefully be extended to cover the entire United States.

Natural History: Birds of eastern North America

Forbush, Edward H., and John B. May. Natural history of the birds of eastern and central North America (Houghton Mifflin Co., Boston, Mass. $5.00 a copy), xxvi+554 pp., 97 colored pls., 1939.

Material and illustrations from Forbush's well-known "Birds of Massachusetts and other New England States" revised, abridged, and supplemented by accounts of more than 100 species and additional colored plates by Brooks and Peterson. Forbush's work, one of the best if not the very best of the State ornithologies, went out of print but its values could ill be spared. They are salvaged here so far as limitations of space permit and the book made applicable to a considerably enlarged region. The plates, conveniently bound together at the end of the volume, are well reproduced and clearly titled.

Natural History: Birds of Kentucky

Wetmore, Alexander. Notes on the birds of Kentucky, Proc. U. S. National Museum (Washington, D. C.), 38(3089), pp. 529-574, 1940.

Report on specimens in the National Museum mostly collected in 1938 in special preparation for this list which does not compile references in the literature. Notes on 167 species and subspecies.

Natural History: Birds of Maine

Aldous, C. M., and H. L. Mendall. Game birds of Maine, University of Maine, College of Agriculture (Orono) Extension Bul. 275, 38 pp., frontispiece and 12 other photos, March 1940.

Treatment of 11 breeding species of game birds, giving for each status and life history notes and management suggestions; there is brief or comment upon 6 groups of migrants and a bibliography of 10 titles.

Natural History: Birds of Michigan

Wing, Leonard. Birds of the upper peninsula of Michigan, State College of Washington (Pullman) Research Studies, 7(4), Dec. 1939, pp. 163-198, 1 map, 8 tables.

Brief descriptions of localities worked; tabulations of frequency of occurrence, and relative abundance of birds both in summer and winter; and annotated list of 131 species.

Natural History: Birds of New York

Hyde, A. Sidney. The ecology and economics of the birds along the northern boundary of New York State, Roosevelt Wildlife Bul. (State College of Forestry, Syracuse, N. Y.), 7(2), Oct. 1939 (June 1940), pp. 62-215, figs. 26-57, tables 7-11, 2 maps.

Climate and ecology of the region, description of 8 types of habitats with lists of their characteristic birds; field observation on birds swarming to feed on green maple worms, and notes on destructive birds (starling, robin, pheasant); annotated list of summer birds; bibliography of 2-1/2 pages.

Natural History: Birds of Ohio

Trautman, Milton B. The birds of Buckeye Lake, Ohio, University of Michigan, Museum of Zoology (Ann Arbor. $2.50 a copy) Misc. Publ. 44, 466 pp., 16 pls., 9 tables, 2 maps, May 1940.

A very comprehensive local report based on 12 years' observations by the author and considerable cooperation which is fully acknowledged. The area treated covers about 44 square miles. Its history and all features of its ecology are exhaustively discussed. General conclusions as to the avifauna and

systematic accounts of the occurrence and migrations of 288 species and subspecies make up the bulk of the volume. The work has a bibliography and an index, both ample. It presents the results of thorough study in excellent form.

Natural History: Birds of Oregon

Gabrielson, Ira N., and Stanley G. Jewett. Birds of Oregon (O.S.C. Cooperative Assoc., Oregon State College, Corvallis. $5.00 a copy), xxx+650 pp., 97 plates (1 col.), 20 figs., 2 tables, 1 folding map, April 1940.

The authors of this work had a combined total of 50 years' experience in Oregon up to 1935. Both are enthusiastic field ornithologists who gave freely of their time, energies, and funds in order to improve knowledge of the birds of Oregon; particularly noteworthy were their arduous efforts to study the sea birds. So far as possible, published information on the Oregon avifauna has been compiled; besides matter distributed through the volume, this effort has resulted in a 13-page chapter on "History of Oregon ornithology," a 35-unit "List of birds originally described from Oregon," and a 30-page bibliography. General chapters present "Something about birds as a group," and treat "Topography and life zones of Oregon," and "Federal bird refuges in Oregon." In the annotated list of species and subspecies (526 pages), characters and general distribution are briefly stated in each case; the history of knowledge of each form in the State is recorded, its habits are described, and whenever possible information on local food habits given. Birds recorded from Oregon on insufficient evidence are discussed in a hypothetical list, and these (33 forms) as well as the admitted species and subspecies (428) are also tabulated in check-lists. The volume has a satisfactory index. A good book by the men best qualified to prepare it.

Natural History: Birds of Pennsylvania

Todd, W. E. Clyde. Birds of western Pennsylvania (University of Pittsburgh Press, Pittsburgh, Pa. $5.00 a copy), xv+710 pp., 23 pls. (22 col.), 1 inserted topographic map, numerous distribution maps and pen and ink sketches of birds, June 1940.

The author is to be congratulated on the highly satisfactory form in which his life-long study is now presented. It treats more than 300 species and subspecies of birds of which 118 "hard for the amateur observer to identify in the field" are illustrated in color from paintings by George M. Sutton. The specific accounts typically include a description, sections on range, migration, and habits, and a synopsis of published records. The introduction deals with geography and physiography of the region, ecological conditions, climate (including a critical discussion of the life-zone concept), comments on the present status of bird life, and gives a historical review of western Pennsylvania ornithology and a record of the field work on which the book is based. The work includes also a gazetteer, a more than 20-page bibliography, and an index of bird names.

Natural History: Birds and mammals of Canada

Clarke, C. H. D. A biological investigation of the Thelon Game Sanctuary, National Museum of Canada (Ottawa), Bul. 96, 135 pp., 25 photos, 3 maps, 2 tables, 1940 (50 cents a copy).

This large sanctuary established primarily to guard the musk ox from extinction, harbors also the barren ground bear and the barren ground caribou, as well as a great variety of other subarctic life. This report gives the history of the sanctuary and of the region, including effects of the human population upon wildlife. Physiography, vegetation, and climate of the area are discussed and the fauna dealt with in annotated lists of mammals, birds, and fishes. The fur production for the period 1928-37 is tabulated. Cycles and diseases are discussed, especially in relation to fur and game animals. The musk ox and the caribou are the subject also of longer special essays giving information on their numbers, ranges, movements, and the factors influencing their populations. Bibliography of 200 titles.

Natural History: Herpetology of New Hampshire

Oliver, James A., and Joseph R. Bailey. Amphibians and reptiles of New Hampshire, New Hampshire Fish and Game Dept. (Concord) Survey Report No. 4, Biological Survey of the Connecticut Watershed, 1939, pp. 195-221, 2 pls.

Annotated list of 37 species with keys to adults by the authors cited, and a key to amphibian larvae of the State by Grace Orton.

Natural History: Mammals of Nova Scotia

Smith, Ronald W. The land mammals of Nova Scotia, American Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 24(1), July 1940, pp. 213-241.

History of knowledge of mammals of Nova Scotia; physiography and ecology of the Province; annotated list of 45 forms of land mammals of which 2 subspecies are described as new; the individual accounts include, so far as practicable, synonymy, statement of distribution, descriptive notes, measurements, remarks, and records of occurrence.

Natural History: Whales

Denmead, Talbott, and Esther E. Dodd. [Leaflets on whales] U. S. Bureau of Fisheries (Washington, D. C.). Whales I-52, 10 pp., 2 tables, mimeographed, May 1940. Whales-2, 30 pp., 21 tables, mimeographed.

The first of these leaflets gives general information about the distribution, habits, and enemies of whales, tells of their commercial products, and gives a history of the whale fishery and of conservation measures. It lists briefly the characteristics of 13 species of cetaceans and includes a bibliography of 21 titles.

The second publication cited is devoted to historical matters and especially to statistics as to the extent of the industry and the catch of usonian firms from 1937 to 1940.

Predation: Prey availability

Wooster, L. D. An ecological evaluation of predatees on a mixed prairie area in western Kansas, Trans. Kans. Acad. Sci. (Topeka), 42, 1939 (1940), pp. 515-517, 2 photos, 1 table.

Continuation of the author's work on the quantitative relations among animals of the prairie (last noticed in WILDLIFE REVIEW, No. 21, May 1939, p. 19). By applying the formula: number (per square mile) X weight (grams) X time available, the author reaches an ecological valuation of prey species. The hares and rabbits are far in the lead, with meadow mice, ground squirrels, and white-footed mice next in rank. The word "predatee" seems unnecessary as it conveys nothing not covered by the simpler and familiar term "prey."

Predation: Vermin problem

Rhoades, R. This predator called man, Ohio Conservation Bul. (132-134 N. Washington St., Greenfield, Ohio. 10 cents a copy), June 1940, pp. 18-20, 3 figs. (cartoons).

Popular discussion of the reasons for dwindling of wildlife and of the vermin problem. The author suggests improvement in cover for all sorts of wildlife as an offset for man's destructive influence.

Propagation: Bob-white

Gaither, Edwin H. Quail hatching in an eggshell, Outdoor Georgia (412 State Capitol, Atlanta, Ga. 15 cents a copy), 1(1), May 1940, pp. 23, 32, 1 photo.

Average number of eggs in the wild, 13; in captivity, 60; maxima from 120-130. Suggestions on care of breeding stock and directions for incubating eggs both by bantams and by incubators.

Propagation: Hybrids

Danforth, C. H., and Gunnar Sandnes. Behavior of genes in inter-generic crosses, Journ. Heredity (32nd St. and Elm Ave., Baltimore, Md. 35 cents a copy), 30(12), Dec. 1939, pp. 537-542, figs. 11-13.

Brought to attention not for its bearing on heredity but for the convenience of those who must answer questions as to whether pheasant-chicken and other inter-generic crosses are possible. The hybrids treated in this paper are Phasianus X Gallus, Phasianus X Syrmaticus, Phasianus X Chrysolopus. Bibliography of 10 titles.

Propagation: Hybrids

Pratt, Jerome J. Hybridization, 1939 yearbook of the American Pheasant Society [p. 12, 3 photos] in Modern Game Breeding (J. A. Gardy Printing Co., 28 W. State St., Doylestown, Pa. 25 cents a copy), 10(4), April 1940.

Phasianus X Gallus and Chrysolophus X Gallus hybrids described and illustrated.

Propagation: Partridge, Chukar

[Reck, J. P., and B. A. Barger]. Breeding and rearing of chukar partridge, North Dakota Outdoors (State Game and Fish Dept., Bismarck, N. Dak. 5 cents a copy), 2(11), May 1940, pp. 13-15, 3 photos.

Based on experience in North Dakota and Wisconsin, notes are given on identification of the sexes, on penning and caring for breeding birds, feeding of chicks, and controlling diseases.

Propagation: Turkey, Wild, standards

Sibley, C. L. Standard for northeastern wild turkey, Modern Game Breeding (J. A. Gardy Printing Co., 28 W. State St., Doylestown, Pa. 25 cents a copy), 10(5), May 1940, pp. 4-5.

General remarks on the turkey and on its wildness; standards based on the wild strain detailed as to shape, color, and weight for the sexes.

Propagation: Trapping

Benton, Lawrence D. A handy game bird trap, 1939 Yearbook of the American Pheasant Society [p. 13, 3 figs.] in Modern Game Breeding (J. A. Gardy Printing Co., 28 W. State St., Doylestown, Pa. 25 cents a copy), 10(4), April 1940.

Description, illustrations, and bill of materials for a wood and wire netting continuous-acting trap.

Research: Cooperative

Rasmusson, D. I. Utah's Wildlife Research Unit, its program and objectives, The Utah Juniper (Utah Agr. College, School of Forestry, Logan), 11, 1940, pp. 17-20.

Background and history of the Unit; its research program sketched under 6 heads: life history and management studies of mule deer, sage grouse, and sharp-tailed grouse, waterfowl food plants, beaver survey, and miscellaneous. The place of personnel training in the Unit's program is explained and plans for future work outlined. Bibliography of 10 titles.

Research: Manpower in

Kalmbach, E. R. Manpower in wildlife research, The Utah Juniper (Utah Agr. College, School of Forestry, Logan), 11, 1940, pp. 14-16.

National work programs have made available greater manpower than has previously been obtainable for many lines of work including wildlife research. The more extensive data obtained has greatly improved the findings. Reference is made to the censusing of herds, checking upon hunting activities, and studies of the nesting success of waterfowl. Details are given of the latter work (in the anthor's special field) relative to the large numbers of nests studied on several Federal refuges. Work on the scale accomplished through CCC and other assistance would have been quite impossible for one or a few investigators. Fundamental ornithological data has been amassed in volume never previously equalled, improving enormously the background for management.

Research: Marking whales

Raynor, George W. Preliminary results of the marking of whales by the Discovery Committee, Nature (St. Martin's St., London, W.C. 2, England. 1 shilling a copy), 144(3659), pp. 999-1002, 7 charts, 1 table.

For several years whales have been marked by stainless steel tubes embedded in the blubber by being fired from a 12-bore gun. More than 5,000 animals have been marked. The percentage of returns is low, averaging less than 5 percent. The information throws some light, however, on the rate of kill and on movements which are mapped for 3 species.

Research: Trapping

Mac Lulich, D. A. Test of a method of small mammal trapping, Canadian Field-Naturalist (582 Mariposa Ave., Rockliffe Park, Ottawa, Canada. 25 cents a copy), 54(4), April 1940, pp. 57-58, 2 tables.

From author's summary: "(1) A plan of crowding break-back mouse traps 8 inches apart in rows spaced 1 foot apart on a rod square quadrat was tried in two successive years; (2) the method required too much labour and gave inadequate and irregular data. It is recommended that traps be spaced much farther apart on larger trapping areas."

Weights: Bobcat, Eastern

Hamilton, W. J. Weights of eastern bobcats, Journ. Mammalogy (Wm. B. Davis, A. & M. College, College Station, Texas. $1.00 a copy), 21(2), May 1940, p. 218.

Average of 74 was 15 pounds, 4 ounces; heaviest 36 pounds.

Weights: Pocket gophers

Smith, Clarence F. Weights of pocket gophers, Journ. Mammalogy (Wm. B. Davis, A. & M. College, College Station, Texas. $1.00 a copy), 21(2), May 1940, p. 220.

Thomomys f. fuscus from Montana; 49 adult males averaged 101.77 grams and 55 adult females 88.81 grams. Extreme and seasonal weights also are given.

ADDENDA

Bibliography: Lewis and Clark Expedition

Criswell, Elijah H. Lewis and Clark: Linguistic Pioneers, University of Missouri Studies (Columbia, Mo. $1.25 a copy), 15(2), April 1940 (rec'd August), cexi+102 pp.

This thorough analysis of the language of the journals kept by members of the Lewis and Clark Expedition is of great interest to naturalists. "Plants and animals occupy more space in the journals than any other subject." Not only are the references to organisms discussed by groups but they are also indexed by scientific names and formally annotated in a terminal lexicon. The work includes a bibliography of Lewis and Clark journals, of secondary sources of information on western explorations, and of works of reference used in the preparation of this very valuable concordance.

Food Habits: Shorebirds

Sperry, Charles C. Food habits of a group of shorebirds: Woodcock, snipe, knot, and dowitcher, U. S. Dept. of the Interior, Wildlife Research Bul. 1 (Supt. of Documents, Washington, D. C. 25 cents a copy), 36 pp., 3 col. pls., 7 tables, 1940.

A standard food habits report based on a total of 1,536 analyses of stomach contents. Sources of the material used for each species is indicated, the range and habits of the bird briefly outlined, and the food discussed in detail. Leading items of diet are for the: woodcock, earthworms (67%); Wilson's snipe, flies chiefly larvae (20%), and earthworms, crustaceans, and aquatic beetles, each 11%; knot, mollusks (59%); eastern dowitcher, insects (29%), marine worms (27%), and mollusks (20%); and long-billed dowitcher, midge larvae (41%). The tables present summaries of the food of each species by principal groups, and a record of frequency of occurrence of all items identified. A useful publication relating to a group, the food habits of which are all too little known.

WILDLIFE LEAFLETS

Issues of interest to wildlife managers additional to those previously mentioned are listed below. Copies of these mimeographed leaflets can be obtained from the Fish and Wildlife Service, U. S. Department of the Interior, Washington, D. C.

BS-157. Sullys Hill National Game Preserve, North Dakota, 3 pp., 2 pls., April 1940.

This preserve has small exhibition herds of big game and also functions as a bird refuge. Its history since 1904 when first established is sketched and the historic features of the region are called to attention. A briefly annotated list of 12 other big game reservations is included.

BS-158. Original and present breeding ranges of certain game birds in the United States, by Robert C. McClanahan, 2 pp. mimeographed, and 37 maps multilithed, 21 pp. in all, April 1940.

One map shows the location of national wildlife refuges in the United States. The other 36 delineate the original and present ranges of as many species, and indicate the refuges of special value to them. Only the black duck shows natural extension of range, similar gains for 4 species of quails being due to transplanting.

BS-159. The chukar and Hungarian partridges in America, by Clarence Cottam, Arnold L. Nelson, and Lawrence W. Saylor, 6 pp., April 1940.

Notes on the introduction and present status of these two species, indexed by States. The chukar is reported succeeding in 7 States and the Hungarian partridge in 19.

BS-160. Wildlife in land planning, by W. L. McAtee, 6 pp., April 1940.

Slight revision of BS-71, Nov. 1936, which was abstracted in WILDLIFE REVIEW, No. 7, December 1936, p. 29.

BS-161. Wildlife technology, by W. L. McAtee, 5 pp., May 1940.

Slight revision of BS-67, Oct. 1936, which was abstracted in WILDLIFE REVIEW, No. 7, December 1936, p. 29.

BS-162. Birds as a factor in controlling insect depredations, by Clarence Cottam and Francis M. Uhler, 6 pp., May 1940.

Value of birds in the operation of natural balance; their achieving actual control of destructive insects is local; a number of recent instances are cited.

BS-163. Common salt as a curative for cannibalism among game birds in captivity, by Ralph B. Nestler, 2 pp., June 1940.

Addition of 2-3 percent of salt to the diet stopped toe-picking among adult bob-whites in 24 hours; 5-6 percent terminated fighting.

BS-165. The status of migratory game birds: 1939-40, 22 pp., June 1940.

Annual report on abundance of the birds according to the flyways and migration, with special sections on the January inventory, on crippling and other indirect losses, natural enemies, and upon the woodcock, mourning dove, and 5 other migratory species treated as game. The ducks and geese as a whole are believed to have increased about 2-1/2-fold since 1935. "The mallard and pintail show the largest gains, that for the canvasback is considered satisfactory, but little change is detected in the status of the redhead. A slight decrease is recorded for the black duck. Canada geese also made a gratifying gain, although much of this was lost through excessive shooting. During January 1940 adverse weather conditions in the Southeast, coupled with legal hunting, made serious inroads into the numbers of woodcocks and mourning doves, with the result that the numerical strength of both species is much below that of 1939. Measures to restrict the kill during the forthcoming season are definitely indicated. The continued status of the white-winged dove as a game species is open to serious question, not only because of improper management in harvesting the crop but also of natural factors that endanger the stock. So far as can be determined, the status of the band-tailed pigeon and the Wilson's snipe is satisfactory for the present year, but both species must be watched to guard against undue depletion."

NOTES AND NEWS

By virtue of the President's Reorganization Plan No. III, the Bureau of Fisheries and the Bureau of Biological Survey were merged into the Fish and Wildlife Service effective June 2, 1940. This is the sixth designation under which the organization longest known as the Biological Survey has functioned. Dr. Ira N. Gabrielson, Chief of the Biological Survey, is the Director of the new Service and Charles E. Jackson, Acting Commissioner of Fisheries, and W. C. Henderson, Associate Chief of the Biological Survey, are Assistant Directors. Nearly 2,000 Federal workers in the United States and Alaska constitute the staff of the agency.

In the Dixie Ranger (U. S. Forest Service, Atlanta, Ga., 6(5), May 1940, pp. 1-2), the growth of wildlife management on national forests is commented upon and a tabulation given for the southeastern States which shows that 8,700,000 acres or about 20 percent of the total area of these forests is now being formally administered for wildlife management purposes.

The Sixth Annual Midwest Wildlife Conference will be held at Urbana, Ill., November 14-16, 1940. The program will include dedication of the Natural Resources Building on the University of Illinois campus, besides papers, exhibits, and field excursions. For information, address Dr. T. H. Frison, Illinois Natural History Survey, Urbana.

On July 10, 1940, a bronze plaque was erected in the State Capitol in memory of Dr. Joseph Kalbfus the first full-time secretary of the Pennsylvania Game Commission, a position he held for 21 years. The plaque, contributed by the sportsmen of the State, bears a bas-relief portrait of Dr. Kalbfus and text citing his record of courage, efficiency, and achievement.

An article on the "Influence of Unrestricted Grazing on Northern Salt Desert Plant Associations in Western Utah," by George Stewart, W. P. Cottam, and Solar S. Hutchings, in the Journal of Agricultural Research (Supt. of Documents, Washington, D. C. 15 cents a copy), Vol. 60, No. 5, March 1, 1940, pp. 289-316, is of interest to wildlife managers having to do with grazing problems. The gist of the authors' conclusions is contained in the following quotation: "Impoverishment of desert forage, attributed by many to the drought of 1928-35, was not so markedly apparent after the drought of 1897-1904, which was of as long duration and, measured in total precipitation, more severe. The evidence gained from the study of these plant associations does not support the theory that drought is the sole or even the chief cause of present deterioration and depletion of the range. Instead, it points unmistakably to unrestricted grazing as the chief cause of loss of grazing values, invasion of inferior species, and the gradual crowding out of the most palatable range plants. The data show clearly that the heavy utilization of the forage by livestock must be relaxed in order to provide for restoration of the range to normal producing power and for its subsequent maintenance."

"Problems of Lake Biology" (Science Press, Lancaster, Pa., 142 pp., illus., 1939. $2.00 a copy) may be of interest to some wildlife managers. It puts in printed form a 9-paper symposium of the Limnological Society of America. Chapters probably of most utility to WILDLIFE REVIEW readers are those on rooted aquatic plants by L. R. Wilson (pp. 107-122, 11 figs.) and on "The position of fish and other higher animals in the economy of lakes" by F. E. J. Fry (pp. 132-142, 3 figs.).

Wildlife managers having to deal with Rocky Mountain trees will be interested to learn that a book of that title by Richard J. Preston has recently been published (i-lix+1-285+lxi-lxxxi pp., 125 pls., figs., 1940, Iowa State College Press, Ames, Iowa. $2.00 a copy, postpaid). The work includes an illustrated discussion of the characters used in identification of

trees and keys to the genera and species treated. It discusses life zones, names their characteristic trees, and gives check-lists of the trees of each of 9 States or parts of States covered. The running accounts describe all parts of each species, and note its silvical characters and habitat. For each widely distributed form, illustrations of diagnostic parts and a distribution map are given. There is also a glossary, a bibliography, and an index. The work seems eminently well done and should be useful.

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